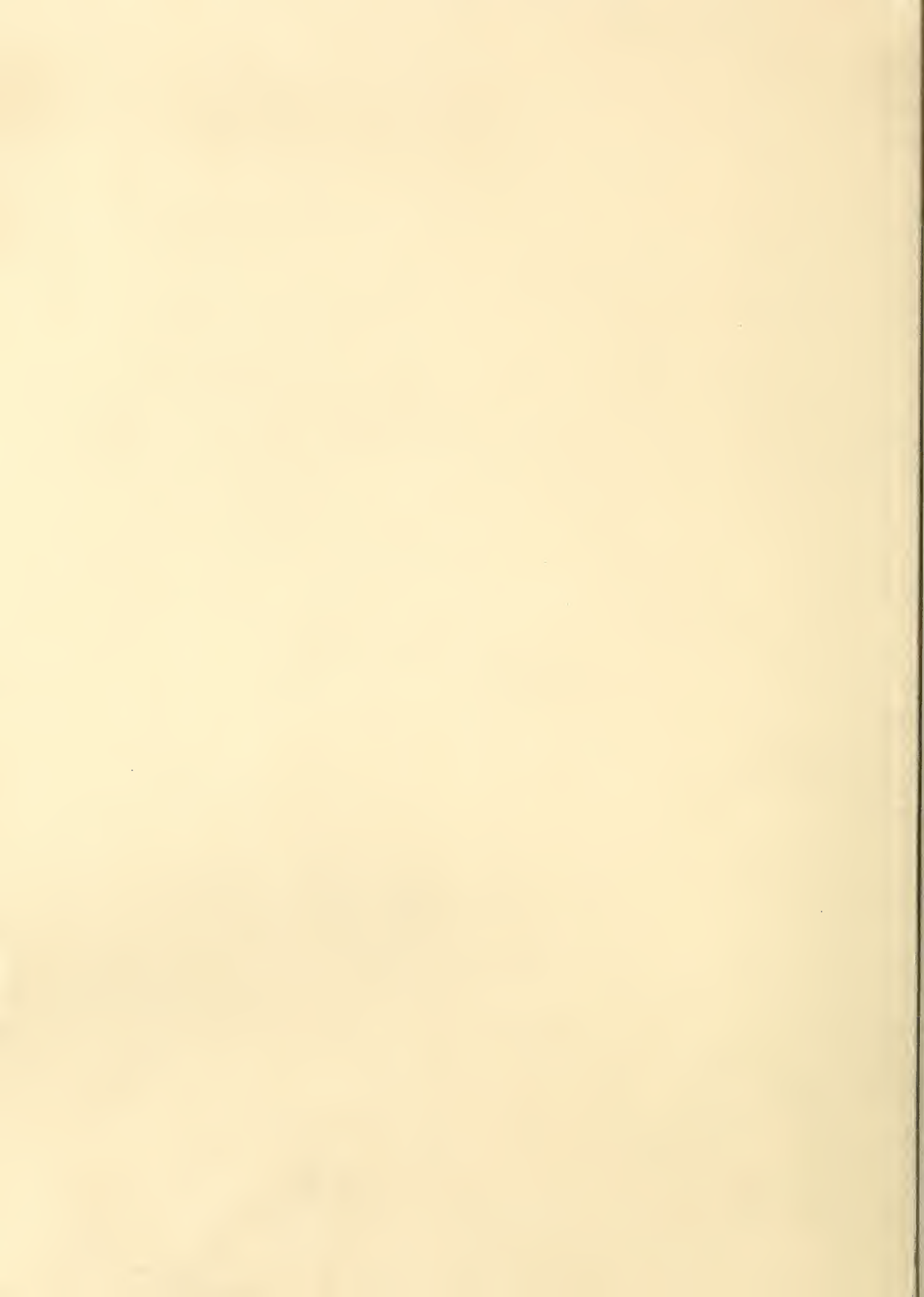


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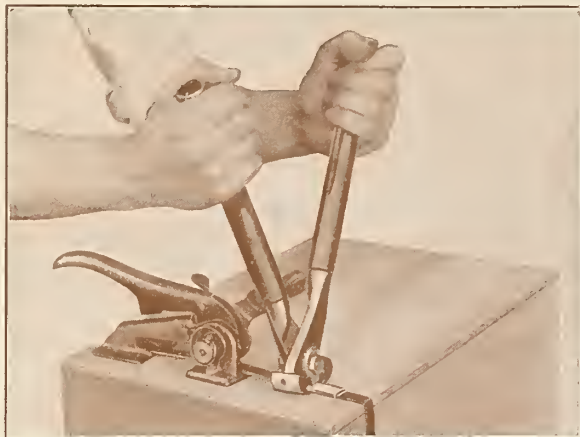
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The Pruning of Stone Fruit Trees

By O. B. Whipple, Bozeman, Montana

Of all phases of orchard work, none is more interesting than pruning; and of all pruning, none is more fascinating than the pruning of those trees commonly known as stone fruits. It is safe to say that no class of fruit trees suffers more quickly from improper pruning, and none responds more promptly to proper treatment. Probably it is this ready response, a response which so clearly indicates whether the pruning has been right or wrong, that makes the work interesting. We are able to see results and to intelligently reason out causes for success or failure, before we have forgotten how the pruning was done. However, the subject is a large one, and I feel it would be a mistake to attempt, in the time at our disposal, to cover the entire field.

The ideas advanced are based upon personal observations and experience in pruning apricots, sweet and sour cherries, nectarines, peaches and plums; and, while of a general nature, and though to some of you they may seem far-fetched, I hope we may be able to get at some of the fundamental principles to be observed in pruning these plants. In the case of each fruit, or at least the more important ones of this class, I shall attempt to answer three questions: Where does the plant bear its fruit? What are the most desirable types of fruiting wood? And how can we best maintain these desirable types? To some this may seem an unusual manner of attacking the subject of pruning, yet I feel that these are things we must know if we are to prune intelligently. In other words, that the principles involved are important ones and that systems of pruning are largely dictated by the fruit-bearing habit of the plant.

The Nature Study idea has in recent years been much talked of in educational circles. Probably nature study in its truest sense was designed for children, but many of us older people might profit had our faculties for observation been quickened by such study. Did it ever occur to you that so much of our education is gained through observation? And do you realize that most of us are such poor observers that two or three good educations might be overlooked in a lifetime? The doctor who is a leader in his profession is not necessarily the man who graduated at the head of his class. More likely he is the one who has done most to educate himself. Such education has been acquired by accurate observation, and the opportunities for observation were afforded by his practice. We are accustomed to class such training as experience, but I fail to see why such an

important part of one's education should receive this commonplace classification.

What I have to say to you, you may call nature study if you like; I shall not feel insulted. But how many are able to answer such questions as these? How many flowers will a single fruit-bud of the peach, plum or cherry develop? Does the fruit-bud of the peach, cherry or plum produce leaves as well as flowers? Where do these fruits really bear their fruit-buds? Yet the information is important if we are to be good pruners. The moral is, we should all be better observers.

Anyone who has had any great amount of experience in pruning our common fruit trees realizes that these trees bear their fruit in certain positions, each kind of fruit tree having a fruit-bearing habit more or less of its own. Possibly we have not stopped to think that many other plants, grown for flowers for instance, have their flower-bearing habit which must be considered in pruning. The rose bears its flowers from certain types of wood and the gardener has learned to regulate flower-bearing by thinning to a certain amount of this wood. However, a system of pruning, such as is commonly practiced in pruning the rose, would leave a lilac bush without a flower. Even the cucumber and the canteloupe have a regular habit of bearing fruit. The pistillate flowers which develop into fruits appear in certain places, while the staminate flowers occupy all other positions where flowers are normally borne. On the first main vine the first pistillate flower is generally well out in the axil of say the sixth, seventh or eighth leaf. On the branch vines a pistillate flower appears in the axil of the first leaf. This branch then commonly grows for some distance before it bears another pistillate flower. If, however, another branch vine arises from this, the first flower is a pistillate flower and it appears in the axil of the first leaf. In these curcubits, early setting of fruit may be induced by such pruning as encourages early branching. The gain is not so much in production as in securing an early set of fruit, and consequently the ripening of the crop over a shorter season.

Among our common deciduous fruit trees, we have two types of fruit-bearing—from axillary buds and from true terminal buds. The axillary buds are borne in the axils of leaves along the side of the branch, and the terminal buds at the tip of the shoot or branch. When applied to buds the last term is confusing, for we must remember that not every bud terminating the growth

of the season is a true terminal bud. In the case of many of the plums and the apricot, the last bud, in fact all buds, are axillary. Each is developed in the axil of a single leaf, while the true terminal bud is usually subtended by two leaves, one on either side of the stem. The plant which bears its fruit from the axillary buds is naturally more productive than the one that bears only from terminal buds. One can see at a glance that a tree bears many more axillary than terminal buds. The stone fruits as a class bear from axillary fruit-buds, and we recognize them as more fruitful than apples and pears, which bear mostly from terminal buds. For this reason, the stone fruits require more vigorous pruning. But a fruit-bearing habit may mean more than bearing from axillary or terminal fruit-buds. These axillary fruit-buds may appear on certain types of wood, or those on certain types of branches may be more desirable. While all stone fruits bear from axillary buds, each has a fruit-bearing habit more or less peculiar to itself, and the pruning of each must be considered separately.

The sweet cherry bears most of its fruit-buds axillary on short spurs. Each bud may produce from one to five or more flowers, but, if any at all, only rudimentary leaves. These spurs are always provided with a terminal branch bud which continues the growth of the spur in a straight line. The rate of growth will vary according to how well the trees are pruned. Spurs on poorly-pruned trees may not grow over a quarter of an inch, and under such conditions of growth are inclined to bear only alternate years. The tree insufficiently pruned bears so many of these spurs that during seasons when they are developing fruit, they cannot obtain enough food material to develop lateral fruit-buds. They simply mature a terminal branch bud which unfolds the following spring, and, under favorable conditions, produces new growth long enough and strong enough to bear lateral fruit-buds.

The most desirable type of sweet cherry fruit spur is one that grows at least three-quarters of an inch per year. Those that grow this much will produce annual crops of vigorous blossoms and large fruit. Spurs may live and produce fruit for many years, but it is a question if it is wise to depend upon old spurs. It is better to prune the tree enough to secure each year some new growths from four to twelve inches long. Such twigs are found in the tops of trees poorly pruned, but they can only be developed throughout the entire tree by vigorous pruning both in the way of

thinning-out and heading-in. These new twigs will bear a few lateral fruit-buds near the base, while those nearer the tips will be branch buds. These branch buds will develop into vigorous and productive young fruit spurs. If the new growths are long and produce many lateral buds, it is best to reduce the number of branch buds to five or six by cutting off the tips during the dormant pruning season. If many buds are left, the resulting spurs will be weak and the best ones will be too far removed from the main branches of the tree.

The sweet cherry then produces its fruit on short spurs and at the base of longer one-year-old twigs. Remember that weak spurs with few axillary fruit-buds are the result of insufficient pruning which leaves too many branch buds. Remember that a few new spurs should be developed each year to take the place of older ones. Remember that these new spurs are the result of pruning, sufficiently severe to force the growth of new shoots which develop not only axillary fruit-buds, but axillary branch-buds. The growth of fruiting wood throughout the entire top may be encouraged by such heading-in and thinning-out as will force new growth in the center of the tree. If we neglect to watch this feature, we some day awake to the fact that all of our fruit is a long way from the ground and must be gathered with long ladders and at a heavy expense.

Also remember that the sweet-cherry bud produces only flowers and that the fruits developed are, to a certain extent at least, dependent upon foliage of the spur for elaborated-food material. This means that fruiting wood cannot be shortened-in as a means of thinning fruit. The fruit upon wood with its terminal and axillary branch buds removed by pruning, would be at a disadvantage, for it must either elaborate food material itself (this it could do during its early period of growth) or it must draw this food material from the limb from which the twig arises. Not only this, but the wood with all its branch buds removed by pruning is destroyed. It has no means of continuing its growth and must die at the close of its fruiting season. Pruning employed as a means of thinning fruit must remove entire and not parts of fruiting branches.

The sour cherry is much like the sweet cherry in its fruiting habit. It is more fruitful on the longer twigs, often all the lateral buds on twigs a foot long being fruit-buds. In fact, the trees can be depended upon to produce much fruit from these stronger new growths. Old spurs are less desirable than in the case of the sweet cherry.

It is well to remember that fruiting branches can be shortened in only to branch buds, for like the sweet cherry, the sour cherry fruit-bud produces from one to five or more flowers, but no leaves of real value. Contrary to the common impression that the sour cherry will not stand pruning, the tree really thrives with severe pruning. In the neglected tree all the axillary buds are fruit-buds. New fruiting wood can

only be developed from terminal buds, and as a consequence the tree is filled with fine wood from one to three, four or even five feet in length bearing a half dozen fruit-buds on a half inch of new growths of sufficient length and vigor to bear axillary branch buds as well as fruit-buds. These branch buds develop into strong young spurs bearing well-developed fruit-buds, which will the next season produce the maximum number of well-developed flowers.

The fruit-buds of the peach are normally axillary and only very, very rarely do we see one terminating a twig. These buds open and produce a single flower, but no leaves. They are borne singly in the axils of single leaves or in pairs, one on either side of a branch bud, the three buds being borne in the axils of as many leaves. The first type of bearing is found in trees poorly pruned or on weak spurs in well-pruned trees. In most varieties shoots that do not make a growth of over ten or twelve inches bear their fruit-buds singly. The triple buds are found on the stronger one-year-old wood. The stronger type of fruiting wood with its triple buds is the most desirable. In the case of single buds it is impossible to thin the fruit by heading-in the fruiting wood. To do this would remove all the foliage from the twig as in the case of the cherry, and the fruit borne by this leafless twig would be poorly nourished. Where the tree has made a poor growth and all the fruiting wood bears single buds, pruning can be employed as a means of thinning fruit only so far as entire branches can be spared. Surplus fruit on the remaining branches must be removed by hand thinning. The buds at the base of these twigs are usually branch buds, and it is well to remember that those to be removed may be made a source of desirable new fruit wood if spurred back to one or two of these branch buds. The fruiting wood with its fruit-buds in pairs with a branch bud between may be cut back even to its last pair of fruit-buds. The branch bud will continue the growth of the twig. With this type of fruiting wood, practically all of the thinning can be done with the pruning shears. It may not be desirable to cut this close when doing the general pruning, but after the fruit is set and danger of frost is past, the fruiting wood may be shortened-in to remove the oversupply of fruit. Thinning is a small task as compared with that on a tree bearing single fruit-buds.

Such a type of fruiting wood can only be developed by severe pruning. As in the cherry, some of these strong twigs will grow in the tops of the poorly-pruned trees, but to grow them in the center of the tree the top must be pruned back severely. Remember that it is almost impossible to maintain a fruiting area over seven or eight feet in depth. Little is gained by growing a peach tree fifteen feet in height when the bottom seven feet is barren. It is better to keep the trees down to a height of ten feet with fruit wood within three feet of the ground. A well-pruned tree will grow three feet

of new top each year; but, if the tree is to continue productive, practically all of this must be removed each year. Prune according to the wood growth you get, and set the standard of twig growth to be desired at from fourteen to twenty inches. It is safe to say that in a well-pruned peach tree four-fifths of the one-year-old growth is removed at each pruning season. Pruning that is too severe will produce strong twigs with the first fruit-buds, near the middle or farther out on the year's growth. Such pruning not only causes the tree to expend energy in the production of needless wood, but necessitates the leaving of fruit-spurs long. This makes the tree bushy and hard to work in, and develops a type of fruiting wood that must be early replaced by newer arms forced from the main limbs. Wood with the triple buds near the base may be spurred back close each year and may be maintained several years before they are long enough to become undesirable.

The nectarine is really a peach and the trees so much like a peach tree that it is unnecessary to outline a special system of pruning. Prune the tree as you would prune a peach tree.

The fruiting habit of the apricot is much like that of the peach, or at least a system of pruning adapted to the peach would do very well for the apricot. The tree is inclined to bear more of its fruit upon short spurs, but it also bears abundantly on longer new growths. On the weaker spurs especially the fruit-buds are often borne singly in the axils of single leaves. On the longer twigs they are found in groups of two, three or four, and on these stronger growths, branch buds are more often found in the clusters with the fruit-buds. Unlike the peach, the apricot twigs bear no true terminal buds. All the buds are axillary and those at the tips of branches may be either fruit-buds or branch buds. The fruit-buds normally bear a single flower and no leaves. As in the case of the peach, fruiting wood bearing its fruit-buds single, cannot be headed-in as a means of thinning the fruit.

The most desirable type of fruiting wood is the longer growth bearing fruit-buds in groups. In these groups there is nearly always a branch bud, and the twig may be headed-in to any point without destroying the spur or leaving the fruits without foliage. The shorter spurs on poorly-pruned trees are apt to bear only fruit-buds. As a result, the spurs die at the end of the fruiting season, for they have no means of continuing their growth. Such trees are inclined to bear heavily only alternate years; at least they bear heavy crops in the main body of the tree only once in two years. Even if poorly pruned the stronger branches in the top of the tree bear every year.

The apricot tree should be pruned severely. Prune until the tree makes as much growth as the well-pruned peach. The growth should be strong enough so fruiting wood will bear some branch buds in the clusters of axillary buds. The twig may then be headed-back to any one of these groups of buds,

as in the case of the peach. The branch bud will continue the growth of the spur and furnish elaborate food material for the developing fruit. Heavy pruning will not by any means do away with bearing from spurs, but it will tend to develop strong spurs that will produce new growth each year and bear annually. Pruning will not take the place of hand thinning entirely, but will greatly reduce the amount of thinning necessary. The tree may as well be headed low and kept low like the peach, for fruiting wood soon smothers out below if the tree is allowed to grow high. In some sections, summer pruning after the crop is off may develop a desirable type of fruiting wood. Fruit-buds formed upon this later growth are tardy about opening in the spring and may escape late spring frost injury.

The different plums vary considerably as to their fruiting habits, but as a class they are more like the apricot in their manner of bearing fruit. On the weaker growths the buds are borne singly and on the stronger growths in groups, either all fruit-buds, or part branch-buds. At least the great majority of plums bear no true terminal buds and weak spurs are objectionable for the same reason that weak apricot spurs are undesirable. Some varieties,

especially those of the Japanese group, bear almost like a peach and can be pruned like a peach. Others, as those of the *Domestica* group which you know as prunes, will not stand such severe pruning. The plum fruit-buds produce only flowers and no leaves, or at best only very rudimentary leaves. Each fruit-bud may bear from one to four or five flowers, the larger number of flowers indicating more vigorous growth and better pruning.

Generally speaking, the best types of fruiting wood are spurs vigorous enough to bear some branch buds, or if the tree bears well on longer growth, twigs bearing groups of fruit-buds well mixed with branch-buds. The first type of fruiting wood is supplied with means of continuing its growth to develop fruit-buds for another year. If the branch bud is not present, the fruit spur dies at the close of the fruiting season and becomes a thorn. And yet we sometimes wonder why plum trees have thorns. Spurs cannot be depended upon for very long service. The best spurs are those one year old. To keep up an annual supply of these one-year-old spurs, one must grow each year a good supply of new twigs from twelve to eighteen inches in length. In most varieties, these twigs will bear some

fruit the following year, and will also develop, from axillary branch buds, strong spurs that may be depended upon for the next crop. In many varieties, these stronger new growths are a very good type of fruiting wood. If the tree is pruned vigorously enough to get new wood twelve or eighteen inches long, this may be shortened-in as a means of thinning the fruit. Nearly every cluster of buds will have one branch bud which may be depended upon to continue the growth of the twig.

One should study the variety of plum he is growing, and prune to get these desirable types of fruiting wood. If the tree bears heavily and requires much thinning, or if it bears fruit throughout the head one year and only in the top the next, the pruning has not been severe enough. Head the tree in from the top each year, for little is gained by growing a tall tree.

It is to be hoped that we have gained something by a discussion of this phase of pruning. If I have not made myself entirely clear, maybe you have the most important points. The time has not been wasted if we only see the importance of being better observers. We must know our plants if we are to care for them well.

The Walnut—Cultural Methods—Top Grafting

By J. B. Neff, Anaheim, California

WALNUTS should be planted only on good deep soil, not underlaid by hardpan, nor where the water will stand on the surface for any considerable length of time. A deep sandy loam is to be preferred, but walnuts will do well on heavy soils that are fertile. Good drainage is always necessary, as well as freedom from late-spring and early-fall frosts. The damage which might occur from late-spring frosts can be largely avoided by planting late-blooming varieties, but a very early-fall frost is sometimes fatal to the next year's crop. The greater part of the orchard planting has been 40 feet apart in squares. This has proved to be too close on good land and 60 feet apart in squares is not too far in most cases. The planting is too often done with the object of getting a large number of trees to the acre instead of getting the maximum production of walnuts and increasing the length of life of the tree. An orchard can be made to pay a good income early in its life by planting 60 feet apart in squares with a tree in the center of each square which can be taken out after twelve to fifteen years. In this way the nuts produced by the inter-set trees will often be enough to pay for the land and the planting by the time they will have to be removed.

Plant only grafted trees, and these should be on roots which are known to succeed well in the locality where the orchard is to be grown. Stocky trees of six to eight feet in height with good root systems should be selected. The planting should be done soon after the

trees have been taken from the nursery. All broken and bruised ends of roots should be cut clean with a sharp knife. Plant at the same depth the tree stood in the nursery, placing the soil around the roots by hand and giving them all the space they will occupy conveniently. Walnut trees do not require the heavy pruning that is needed by most deciduous trees, and if there is a good root system carefully taken up with the tree it is not necessary to cut back the single stem of a walnut tree when planting. The lower branches should start at four to five feet from the ground and in such position as to have the heavy side of the tree to the southwest. A good rule for the early pruning is to cut off only those branches in the way of the team when cultivating, or that tend to draw the tree too much away from the prevailing winds. No general heading back should be done as this causes the tree to become bushy, which is a condition to be avoided. When the trees are eight to ten years old there will be small branches in the center which shut out the sunshine. These should be taken out, together with all branches that are crossed, as there will be no walnuts in the centers of the trees unless there is sunlight through the trees. A good deal of labor and time can be saved if the trees are gone over in June and the long and useless shoots taken out. It may also be necessary to go over them in July, but much less work will be needed then. The young trees should be supported by stakes during the first two or three years. A convenient stake

is made by using redwood 2x2 inches by 9 feet long. In addition to making a support for the body any drooping branches can be raised to the proper angle by using short lengths of light rope tied to the top of the stake.

A walnut orchard which has received good care will begin to produce paying crops after the fifth year from planting and should increase in production for many years. Walnut trees will live to a great age in suitable localities and with proper care. Trees in the south of France and in Spain which are believed to be more than 300 years old are producing heavy crops. Much thought should be given to cultivation and pruning as these assist in producing larger crops and giving longer life to the trees. Frequent cultivation keeps the moisture in the soil for use in filling the nuts and making strong buds for the next crop. Proper pruning promotes growth of wood, gives light through the tree and produces larger walnuts. Instead of pruning to take out dead wood the pruning should be done to keep the wood from dying. If the grower will but remember that walnuts measuring one and one-eighth inches in diameter are almost one-half larger than walnuts measuring only one inch in diameter, and that walnuts measuring one and one-fourth inches in diameter are almost twice as large as those measuring only one inch in diameter he will do much better pruning, since the better pruning produces the large walnuts.

Continued on page 19

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Nitrate of Soda for Fertilizers

[Weekly News Letter, U. S. Department of Agriculture]

THE Department of Agriculture has for some time been giving careful consideration to the problem of securing nitrate of soda for fertilizer use. Under a recent authorization of Congress there is available an appropriation of \$10,000,000 to be used, at the discretion of the President, to secure nitrate of soda and to supply it to farmers at cost for cash.

It is proposed to co-ordinate all the Government purchases of Chilean nitrate for this country through the purchasing committee of the war industries board, under the immediate supervision of Mr. Baruch, so that there will be no competitive bidding for this material. This should very much simplify the problem and make it feasible to secure the best possible terms. The price of Chilean nitrate on board ship in Chile has greatly increased within recent months without justification. Shipping rates also have increased. The increase in price is due in part to unfounded statements regarding the demand for Chilean nitrate for munitions purposes and for fertilizers, especially in connection with the \$10,000,000 recently appropriated by Congress to pur-

chase nitrate of soda. As a matter of fact, the demands of this country for nitrate of soda will be smaller than heretofore. The navy already has placed contracts for this material to satisfy its needs for the next twelve months. The war department announces that practically all the sodium nitrate which it has been planned to procure for the gradual building up of the war reserve already has been contracted for. The quantity which may be purchased for fertilizer use under the special appropriation of Congress will not be an addition to the quantity normally used. Any quantity purchased by the Government and sold to farmers will simply take the place in part of quantities heretofore supplied to them through private agencies. As a matter of fact, unless satisfactory prices can be secured it is probable that the farmers will not seek as large a quantity of this material as has been used in the last year or two. Some contracts already have been made by farmers for nitrate of soda. In view of all these facts, it is probable that the aggregate demand for the next five or six months will be below the normal. It is certain

that unless the market prices, which are now in the neighborhood of \$100 a ton, fall the farmers' demand for nitrate will decrease.

As has been stated, the purchasing will be handled directly through the war industries board. The department of agriculture will co-operate with the purchasing committee in the effort to procure nitrate of soda. It is authorized by law to secure facts as to the demand for fertilizers, including nitrate of soda, their supply, consumption, costs and prices, and the basic facts relating to their ownership, production, transportation, manufacture, storage and distribution. This inquiry is now being prosecuted through the bureau of markets. In connection with this the needs of farmers will be ascertained and all amounts purchased for their use, after the shipments reach the ports, will be taken charge of by the department and will be distributed through the department to farmers at cost for cash. The collections will be made by the department and will be turned into the treasury. To assist the department in its activities in this direction the services of Mr. Mell R. Wilkinson of Atlanta, Georgia, have been secured. He will be given such assistants as may be needed and will have available the services of the experts of the bureau of soils and the bureau of plant industry.

Authority has been given the President, if necessary, to license the importation, manufacture, storage and distribution of fertilizers, to require the licensees to submit reports, and to permit entry and inspection of their places of business. The President is further authorized, if he shall find that any storage charge, commission, profit or practice of any licensee is unjust, or unreasonable, or discriminatory and unfair, to cause such charge, commission, profit or practice to be discontinued, and in lieu of such charge, commission, profit or practice may determine what is just and reasonable, and his finding shall be prima facie evidence in any court in which proceedings may be brought. It is also provided that licenses may be revoked for cause. If it becomes necessary to exercise the licensing power, the department of agriculture, through a special agency, will utilize the services of the licensing division of the food administration.

There have been available no thoroughly satisfactory data as to the yields of crops, due solely to the application of nitrate of soda, and therefore as to the price at which farmers can afford to use it. Realizing this fact, the Secretary of Agriculture directed the bureau of plant industry last spring to make 100 experiments. These experiments are being made with corn in five Southern States—Virginia, North Carolina, South Carolina, Georgia and Alabama—in ten counties in each state, and on two farms in each county. It is hoped that the results of the investigation will be available within the next six weeks. When information is secured it will promptly be given publicity.

Trees in BLASTED soil bear better

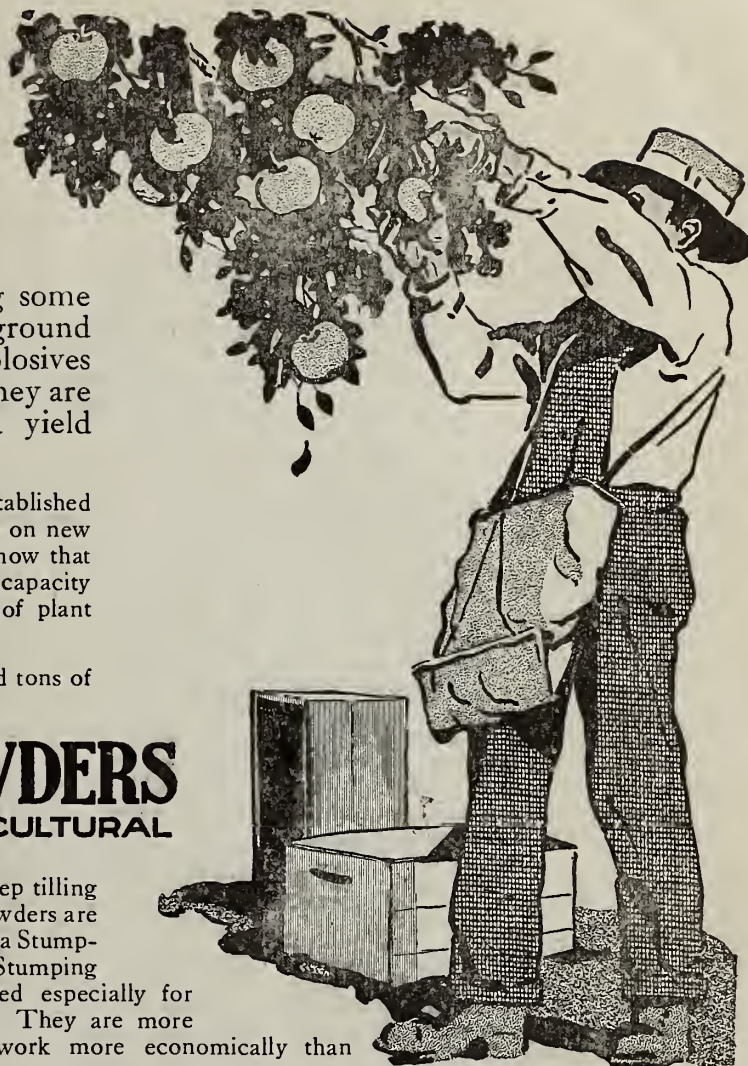
Fruit growers have proved—by planting some trees in blasted beds and others in ordinary ground—that trees planted after the use of explosives root deeper, grow faster and better—that they are thriftier in every way, bear earlier, and yield larger crops.

They have proved also that when the soil of established orchards is properly blasted the trees immediately take on new vigor and bear better fruit thereafter. Orchardists know that this condition is due to the increased moisture-storage capacity induced by blasting and to the consequent release of plant food from the subsoil.

Fruit growers in every Pacific Coast State have used tons of

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Fruit Growers Say:

"My orchard has made excellent growth, due to the fact that I used dynamite, breaking up the soil and making excellent beds for the roots. If I were to set another orchard I would not think of doing so without blasting each tree hole."

T. A. JOHNSON,
Boise, Idaho.

"Generally speaking, the growth of plants depends upon the condition of the soil into which the roots penetrate. If the depth of loose soil is too limited or the surface water is permitted to stand too long, the growth is impaired. Explosives properly used have invariably resulted in excellent growth. The yield is often three times as great on blasted soil as from those untreated in the same vicinity."

ROSECROFT FRUIT FARM,
Summer, Wash.

"We consider the use of explosives an important factor in planting orchards. It is important to secure good drainage and the roots should be able to penetrate deeply into the subsoil. Young fruit trees newly planted should make at least one foot of new growth the first year, and this is hardly possible unless the land is put into good mechanical condition, with plenty of room for the roots to spread in the loosened subsoil."

A. LINGHAM,
Puyallup, Wash.

"Giant explosives are of great benefit for blasting beds for orchard planting. The difference in growth between unblasted trees and trees in blasted ground is so much in favor of the latter that no adequate comparison can be made."

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for planting trees and deep tilling their orchards. These powders are made in two brands, Eureka Stumping Powder and Giant Stumping Powder, and are prepared especially for farm and orchard work. They are more effective and do their work more economically than ordinary dynamites.

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Recent Car Shipments from the Northwest

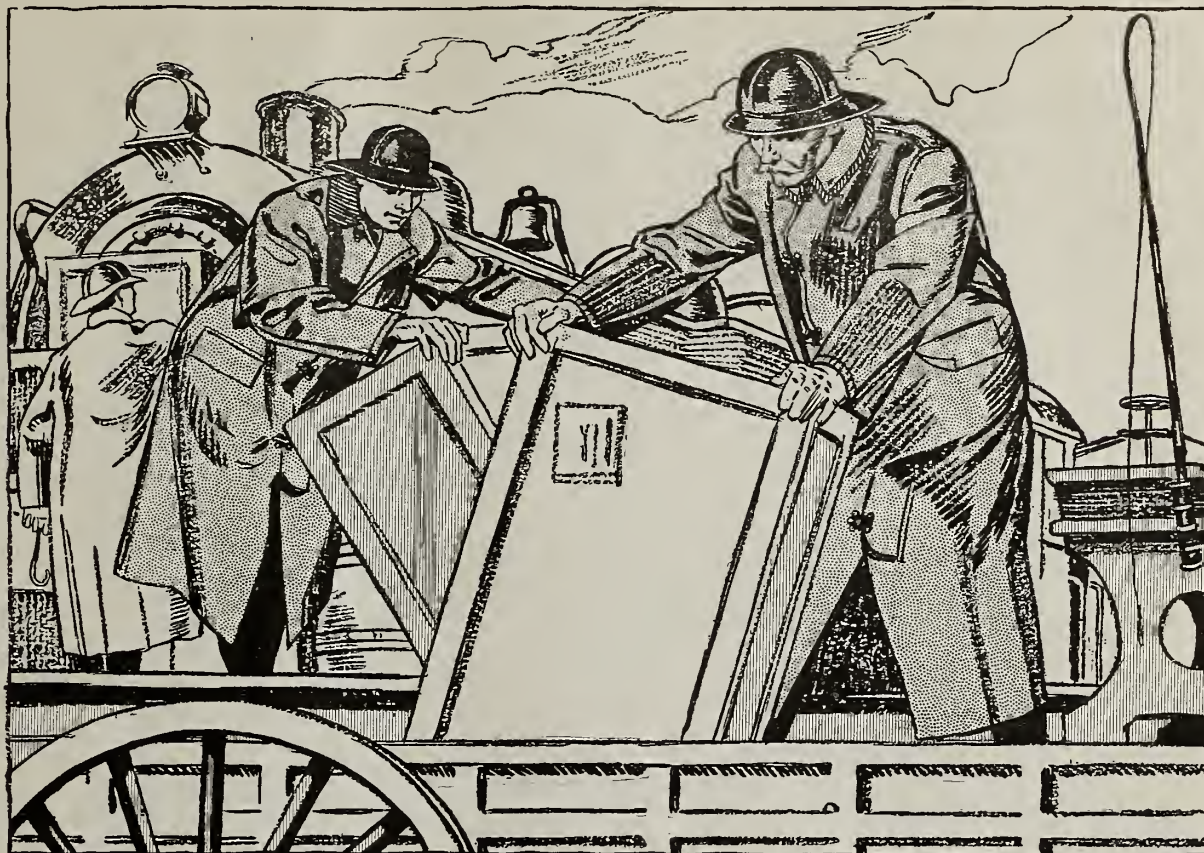
THE following list of towns to which carloads of apples have been shipped from the Northwest is made up from reports of the Fruit Growers' Agency, October 1 to 22 inclusive. The reader should bear in mind that this list does not represent the entire number of towns shipped, for the reason that many of the towns are diversion points from which the cars are shipped to a number of other cities, and therefore it cannot be an exact record, but nevertheless contains valuable and interesting information. One large apple dealer in the Middle West calls particular attention to the fact that Jamestown, South Dakota, is a diversion point, to which his firm has shipped 55 cars of apples, which have been diverted from Jamestown to various cities, and that every town in their territory has been sold. We are certainly glad to have this information, for the reason it shows the trade is anxious in serving the Northwest to establish as wide a distribution as possible. The editor is also pleased and feels complimented over the fact that dealers, shipping concerns, as well as individuals, have given sufficient attention to the series of articles appearing in the past few issues of BETTER FRUIT to write the editor, complimenting and criticising him. The editor is glad that the articles are of sufficient interest to command attention and appreciates the fact BETTER FRUIT is read and its articles criticised as well as complimented. The list contains 394 towns, to which 4,217 cars were shipped direct, not including apples going to diversion points for other cities. This list is from October 1 to October 22. Last year the list published in the November edition was from October 1 to October 26, four days more, showing 415 towns shipped to, or 21 towns more than have been shipped in the list for this year, but this year would undoubtedly equal last year on the same number of days. But the reader must take into consideration that the season is very late this year and that shipments to date are about 25 per cent less than last year. When these facts are taken into consideration it shows a decided improvement for 1917:

Aberdeen, S. D.	23	Carlton, N. Y.	2
Alexandria, La.	2	Clinton, Iowa	1
Anderson, Ind.	1	Dallas, Texas	29
Ardmore, Okla.	1	Denver, Colorado	108
Ashton, Idaho	2	Duluth, Minn.	37
Australia	1	Des Moines, Iowa	30
Adrian, Wash.	1	Dayton, Ohio	4
Akron, Ohio	5	Detroit, Mich.	40
Albany, N. Y.	2	Deer Lodge, Mont.	2
Alexandria, Minn.	4	Dickinson, N. D.	2
Appleton, Wis.	2	Danville, Ohio	1
Arco, Minn.	1	Deadwood, S. D.	1
Arlington, S. D.	1	Devil's Lake, N. D.	2
Altos, Pa.	1	Davenport, Iowa	3
Altus, Okla.	1	Dillon, Mont.	1
American Falls, Idaho	1	Drake, N. D.	1
Alexander, N. D.	1	Douglas, Arizona	1
Auburn, N. Y.	1	Dubuque, Iowa	1
Astoria, Oregon	1	Dekatur, Iowa	1
Aneta, N. D.	1	Enterprise, Oregon	1
Bakersfield, Oregon	1	El Paso, Texas	4
Baltimore, Md.	11	Enid, Okla.	8
Beach, N. D.	3	Everett, Wash.	2
Billings, Mont.	9	Evansville, Ind.	1
Bismarek, N. D.	22	Everson, Pa.	1
Boston, Mass.	39	Eau Claire, Wis.	1
Beaumont, Texas	7	Edmonton, Canada	11
Buffalo, N. Y.	18	Ellsworth, Kansas	1
Bellingham, Wash.	6	Esbon, Kansas	1
Berham, Minn.	1	Ellwood, Minn.	1
Birmingham, Ala.	13	Embsen, N. D.	2
Brandon, N. D.	2	Emporia, Kansas	1
Bridgeport, Iowa	5	Eshbaech	1
Bankal	1	Elmira, N. Y.	2
Bueyrus, Ohio	1	Erie, Pa.	1
Butte, Mont.	24	Fairfield, Neb.	4
Bozeman, Mont.	4	Fargo, N. D.	25
Brandon, Canada	1	Ferndale, Wash.	1
Bridgeport, Conn.	8	Fairfield, Iowa	1
Browning, Mont.	1	Fort Worth, Texas	14
Burlington, Iowa	2	Fosston, Minn.	1
Brownvalley, Minn.	1	Freemont, Neb.	2
Burlington, Iowa	1	Farrell, Nevada	1
Bisbee, Ariz.	3	Ferndale, Minn.	1
Brookings, S. D.	1	Flasher, N. D.	2
Baker, Mont.	1	Farmers City, Ill.	1
Bellefontaine, Ohio	1	Ft. Wayne, Ind.	1
Belle Fourche, S. D.	1	Freeport, Neb.	1
Bangor, Maine	1	Faith, S. D.	1
Berthold, N. D.	1	Forsyth, Mont.	1
Brantford, N. D.	1	Faulkton, S. D.	1
Council Bluffs, Ia.	2	Geneve, Neb.	1
Calgary, Canada	21	Grafton, Texas	1
Canton, Ohio	2	Great Falls, Mont.	14
Chattanooga, Tenn.	4	Glendive, Mont.	3
Cedar Rapids, Ia.	3	Grand Island, Neb.	1
Clainworth	1	Grand Forks, N. D.	18
Cheyenne, Wyo.	121	Gretton, S. D.	1
Chicago, Ill.	509	Gooding, Idaho	1
Cincinnati, Ohio	19	Greenville, Texas	2
Columbus, Ohio	18	Gackle, N. D.	1
Cleveland, Ohio	32	Glasgow, Mont.	3
Crawford, Neb.	4	Groton, S. D.	1
Casieana, Texas	1	Gr. Prairie, Texas	1
Crookston, Minn.	2	Galesburg, Ill.	1
Cutbank, Mont.	27	Glenullin, N. D.	1
Candalls, Kansas	1	Garden City, Kan.	1
Charlestown, W. V.	2	Grafton, N. D.	3
Chester, Mont.	1	Helena, Mont.	3
Chippewa Falls, Wis.	2	Hartford, Ill.	1
Conrad, Mont.	3	Hilton, S. D.	1
Council Bluffs, Ia.	1	Houston, Texas	35
Canwood	1	Havre, Mont.	4
Carrington, N. D.	1	Hilton, Wash.	2
Churches Ferry	1	Houlton, Maine	3
Coneora, Wyo.	1	Huntington, Texas	1
Cogswell, N. D.	1	Hutchinson, Kans.	1
Clarendon, Texas	1	Hoquiam, Wash.	1
Centerville, Iowa	1	Harvey, N. D.	1
Condi, S. D.	1	Hastings, Neb.	3
Creston, Wash.	1	Hartford, Conn.	5
Cherokee, Iowa	1	Harwood, N. D.	1
Camrose, Canada	1	Hettinger, N. D.	1
		Hunter, N. D.	1
		Harlowtown, Mont.	1
		Hope, Idaho	1

Huron, S. D.	2	Pease, Wash.	3
Harris, Minn.	1	Paris, Idaho	1
Heaton, N. D.	1	Portland, Maine	4
Hilton, Neb.	1	Pittsfield, Mass.	1
Huntington, Neb.	1	Quebec, Canada	1
Indianapolis, Ind.	25	Quincy, Ill.	1
Isabel, S. D.	1	Rugby, N. D.	2
Independence, Kan.	1	Regent, N. D.	1
Junction City, Kan.	1	Regina, Canada	21
Jackson, Tenn.	1	Rockford, Ill.	2
Jamestown, N. D.	13	Rafford, Canada	1
Joplin, Mo.	4	Richland Center, Wis.	1
Jacksonville, Fla.	3	Redfield, S. D.	1
Joliet, Ill.	2	Rocksprings, Mont.	1
Kansas City, Mo.	76	Riverton, Wyo.	1
Kimmerer, Wyo.	2	Red Deer, Canada	1
Kimball, S. D.	1	Rolla, N. D.	1
Kent, Wash.	2	Roundup, Mont.	3
Kerobert, Canada	1	Raymore, Canada	1
Kitchner, Canada	1	St. Louis, Mo.	76
Louisville, Ky.	2	St. Paul, Minn.	60
Lakata, N. D.	3	Salt Lake City	2
Longdon, N. D.	1	San Antonio, Tex.	11
Laramie, Wyo.	3	San Francisco, Cal.	38
Laredo, Texas	3	Seattle, Wash.	82
LeRoy, N. Y.	27	Selah, Wash.	2
Lincoln, Neb.	27	Shreveport, La.	20
Los Angeles, Calif.	59	Sioux City, Iowa	40
Laurel, Mont.	19	Spokane, Wash.	85
Little River, Kans.	1	Springfield, Ill.	3
Livingston, Mont.	3	Strasburg, N. D.	1
Lewiston, Mont.	3	Streator, Ill.	1
Lindsay, Okla.	1	Sumner, Wash.	14
Lethbridge, Can.	2	Susp. Bridge, N. Y.	16
Lewisville, Idaho	2	Swift Curr't, Can.	8
Lexington, Ky.	2	Shelley, Mont.	1
Lewiston, Idaho	4	Scottsbluff, Neb.	1
Lima, Ohio	1	Sault Ste. Marie	1
Lake City, S. D.	1	Stockton, Calif.	1
Lake Preston, S. D.	1	Sacramento, Calif.	3
Laramie, N. D.	2	San Bernardino, Calif.	1
Logansport, Ind.	1	Santa Barbara, Cal.	1
Malvern, Iowa	1	San Diego, Calif.	2
Mason City, Iowa	1	Shelby, Mont.	3
Medina, N. Y.	14	Sioux Falls, S. D.	14
Millette, Wyo.	1	Saskatoon, Canada	23
Milwaukee, Wis.	23	Stanley, N. D.	1
Minneapolis, Minn.	313	Sherburn, Minn.	1
Minot, N. D.	87	Springfield, Ohio	1
Minnesota Transfer	5	Springfield, Mass.	5
Monroe, La.	2	Sheridan, Wyo.	4
Moosejaw, Canada	1	Sterling, Ill.	1
Millette, S. D.	1	Syracuse, N. Y.	1
MacRorie, Canada	1	Sidney, Wyo.	1
Missoula, Mont.	14	Scottsbluff, Neb.	1
Mobile, Ala.	1	Spiritwood, N. D.	1
Mobridge, S. D.	1	Texarkana, Texas	6
Muskegon, Okla.	5	Thorne, N. D.	1
Miles City, Mont.	6	Tulsa, Okla.	12
Manchester, Mont.	1	The Dalles, Oregon	7
Mayville, N. D.	1	Topeka, Kans.	5
Memphis, Tenn.	4	Toronto, Canada	25
Mitchell, S. D.	6	Tacoma, Wash.	8
Morinville, Canada	1	Terry, Mont.	1
Manchester, Iowa	1	Trinidad, Colo.	1
Mandan, N. D.	1	Temple, Texas	1
Mobridge, Minn.	1	Tulsa, Arizona	1
Manville, Canada	1	Tyler, Wash.	1
Montreal, Canada	4	Tracy, Mont.	1
Minden, Neb.	1	Tripp, S. D.	1
Marshalltown, Ia.	2	Temple, Arizona	1
Nowbridge, S. D.	1	Tabor, Canada	1
Milfort, Mo.	1	Toppensish, Wash.	2
Marion, Ohio	1	Toledo, Ohio	2
Mareus, Iowa	1	Tunis, Mont.	1
Medicine Hat, Can.	2	Vancouver, Canada	23
Milton, Oregon	1	Velva, N. D.	1
Norfolk, Va.	3	Vergas, Minn.	1
Nashville, Tenn.	9	Valley City, N. D.	3
New London, Wis.	1	Vermillion, S. D.	1
New Orleans, La.	22	Vulcan, Wash.	1
New York, N. Y.	459	Walla Walla, Wash.	4
North Bay, Canada	1	Washington, D. C.	31
Norfolk, Neb.	7	Waterbury, Conn.	7
North Platte, Neb.	39	Waterloo, Iowa	1
New Haven, Conn.	4	Whitefish, Mont.	33
New Rockf'd, N. D.	1	Williston, N. D.	7
Newberg, Oregon	1	Wilson, N. Y.	1
Newport, R. I.	1	Winnipeg, Canada	30
North Battleford	1	Winona, Minn.	1
New Salem, N. D.	1	Wasco, Texas	12
New Bedford, Mass.	1	Wallace, Idaho	3
Ogenia, Wis.	1	Weyburn, Canada	7
Oklahoma City	10	Wapato, Wash.	2
Omaha, Neb.	176	Wahpeton, N. D.	3
Ogden, Utah	1	Warren, N. D.	1
Olympia, Wash.	1	Wolfpoint, Mont.	1
Ottawa, Canada	4	Worland, Wyo.	1
Oshkosh, Wis.	2	Wiehita, Kans.	4
Orient, S. D.	1	Watertown, S. D.	2
Othello, Wash.	1	Winfield, Kans.	1
Peoria, Ill.	3	Worcester, Mass.	6
Philadelphia, Pa.	34	Wilson, Idaho	1
Pittsburg, Pa.	121	Walford, N. D.	1
Portland, Oregon	34	Wells, Wash.	1
Providence, R. I.	14	Xenia, Ohio	1
Payette, Idaho	4	Yakima, Wash.	24
Pocatello, Idaho	6	Yorkton, Canada	3
Princeton, Minn.	1	Yokum, Texas	1
Prescott, Wis.	1	Zilla, Wash.	8
Phoenix, Arizona	2	Zanesville, Ohio	1
Portal, N. D.	1		
Phillipsburg	1		
Prince Albert	1		

Total towns 394; total cars 4,217.

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Distribution of the New York Peach Crop

[Editor's Note.—This article contains some valuable and interesting data on the distribution of the New York peach crop, which everyone should read who is interested in the distribution of the Northwestern apple crop, as it indicates a very broad distribution for the quantity marketed.]

In the past the great problems of peach-growers, as of those who grow other agricultural products, have been cultural in their essential character. Attention to problems of distribution have had to do with the opening up of new regions of production—the expansion of the agricultural domain; with developing means of transportation—railroad lines, steamboat service, canals; and in developing centers of consumption in habitable parts of America. Until recent years, little has been done in studying the commercial disposition of agricultural products. Now, however, studies are being made everywhere of the distributive systems by which products get to market and to determine what share of the consumer's price should go to the producer and what to the distributor. Everywhere the importance of these economic studies is recognized and no producer sees more clearly than the New York peach-grower the need of improvement in handling products to distribute risks, reduce risks, decrease the number in the vast armies of middlemen and in every way improve defective distribution. But these questions belong to specialists—economists. We wish here only to furnish a few fundamental data which may be of use to all concerned in the distribution of the peach-crop.

In the economic study of the peach-industry in the state it is essential to know the volume of the product in the state; what proportion of the total dif-

ferent sections produce; how the crop is distributed in consumption; and the movement of the peach-crop from competing peach-states. These data we undertake to furnish for the year 1915, a normal peach-year, taking the figures from the transportation lines handling peaches in New York so far as obtainable. The volume of the product for Western New York is shown by figures taken from the New York Central Railroad and the Lehigh Valley Railroad. Peaches were shipped from towns as follows:

Cars		Cars	
Adams Basin	26	Lewiston	432
Albion	41	Lockport	119
Appleton	108	Lodi	3
Ashwood	19	Lindenville	171
Barker	261	Medina	76
Barnard	72	Middleport	36
Brice	24	Millers	87
Brighton	3	Model City	156
Brockport	116	Morton	188
Buffalo	2	North Road	2
Burt	244	Ontario	43
Carlton	25	Pittsford	2
Caywood	16	Ransomville	38
Charlotte	88	Rochester	214
Covert	21	Rushville	3
E. Williamson	52	Sodus	126
Elberta	24	Spencerport	91
Elm Grove	1	Trumansburg	11
Fancher	17	Union Hill	1
Fruitland	48	Valois	5
Gasport	108	Walker	168
Geneva	19	Waterport	15
Greece	14	Waverly	1
Hamlin	216	Webster	3
Hector	28	Williamson	371
Hilton	314	Wilson	126
Holley	27	Wolcott	15
Junius	61		
Kendall	70	Total	4568

These figures include plums, but the shipment of plums in 1915 was so insignificant as to be negligible and more than offset by shipments of peaches not accounted for by the carriers' names. In addition to the above the American Express Company took out of this territory about 175 cars, mostly in less than car-lot shipments.

Accurate figures could not be obtained from the Hudson River Valley and Long Island shipping points as so much of the fruit is shipped by water, but basing the yield in 1915 on the census reports of 1909 as to yields and number of trees as compared with similar data for these years from Western New York, a rough approximation of the number of carloads in Eastern New York is 600. From reports received from the chief Hudson River navigation lines it would seem that they probably carried about one hundred carloads.

Practically all of the 600 carloads grown in Eastern New York were consigned to New York City or nearby towns. From the above table we may assume that about 5000 carloads were produced in the rest of the state and we are fortunate in having a record as to where 4419 of these were consigned. The New York Central Railroad distributed the number of carloads named as follows:

No. Cars	Pct. of Crop	Destination	No. Towns
1628	36	Buffalo and points west, including Pittsburg...	96
906	20	Pennsylvania and points south of Newberry Jct.	72
222	5	Points east of Albany...	25
986	22.3	Points north of New York City	145
677	15.7	New York City	1
4419			339

Analyzing these figures we find that 4,419 carloads reached 339 destinations grouped as follows: 9 cities took 2,378 cars, over one-half of the crop; 21 cities took 3,018 cars, two-thirds of the crop; 59 cities took from 4 to 10

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1423-24 NORTHWESTERN BANK BLDG.
PORTLAND, OREGON.
E. SHELLEY MORGAN
NORTHWESTERN MANAGER
WE CARRY—AND CAN SHIP IN 24
HOURS—STOCK LABELS FOR PEARS,
APPLES, CHERRIES & STRAWBERRIES.

cars each; 231 cities took from 1 to 3 cars each; 62 per cent of the crop went outside of the state; 22.3 per cent went to points in New York north of New York City; 15.7 per cent went to New York City.

The nine cities which took over one-half of the crop are:

Cars	Cars
New York..... 677	Cincinnati 116
Pittsburg 555	Syracuse 109
Philadelphia 418	Columbus 109
Cleveland 156	Detroit 103
Boston 135	
Total 2378	

While these nine cities took over one-half of the 1915 peach crop, twenty-one cities took 3,018 carloads. In addition to those already named, these cities are as follows:

Cars	Cars
Newark, N. J. 77	Schenectady 46
Dayton, Ohio 69	Watertown 44
Albany 67	Indianapolis 43
Utica 64	Toledo 37
Baltimore 55	Providence 36
Troy 52	
Wilkes-Barre ... 50	Total 3018

Remarks—The New York peach crop for the year 1915 was 5000 cars, with actual destination obtained for 4419 cars. The statistics show that 4419 cars were distributed in 339 cities. If the Northwest apple crop susceptible to as wide a distribution in carlots for the reason that many towns are too small to consume a carload of peaches in a limited time before they would spoil, whereas a carload of apples would keep sufficiently long to afford every small city a much longer period for consumption, which is sufficient evidence in itself to show that apples can be sold in carlots to much smaller cities than peaches. Particular attention is called to the fact that 231 cities, evidently small ones, appear in the distribution taking from one to three cars each. It must be borne in mind in connection with this article that the peach crop of New York is only one of many of the large districts producing peaches extensively. It would seem if the Fruit Grovvers Agency would collect data in was distributed equally as well in proportion to quantify the distribution would cover 1695 cities. However, in making this statement it must be noted that peaches are far more perishable than apples, and consequently not so reference to the shipment of apples from the Northwest during the coming season they could present some very valuable information on distribution for future years. In as much as the work on the distribution of the peach crop was largely done by the Experiment Station of New York it would seem that the Experiment Stations of Washington, Oregon, Idaho, Montana and other states could do some similar work on the apple shipments of the 1917 crop, and by proper analysis of the data present some suggestions that would be well worthy of consideration. As the number of cars of apples shipped from the Northwest is about five times greater than the number of cars of peaches shipped from the state of New York, and as the peach crop was distributed in 339 towns, it would seem that the

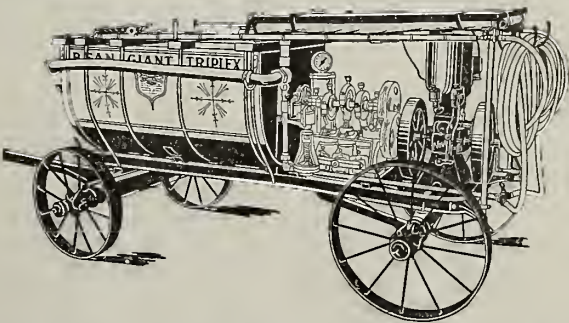
apple crop of the Northwest should at least be distributed in 1625 cities—and then some, which would be a big increase over the past distribution of about 611 cities—the number known so far as reported.

A 25,000 Box Apple Sale at Wenatchee.

Officers of the Wenatchee Heights Unit have sold the apple crop of the Heights, approximately 25,000 boxes, the sale including almost all of the fruit of Wenatchee Heights. The contract calls for the delivery of the fruit at South Wenatchee Avenue. The Heights fruit this year, as in years past, grades high, and the extra fancy prices particularly are very satisfactory to the growers. The growers get

pay for the fruit on delivery at the warehouse and the burden of furnishing cars is on the buyer. The following are the prices for the different varieties and grades:

Winter Banana, \$1.75, \$1.50, \$1; Delicious, \$1.70, \$1.45, \$1; Spitzenbergs, \$1.50, \$1.25 and 90c; Jonathans, \$1.15, \$1 and 75c; King David, \$1.10, 95c and 75c; Black Bens, \$1.10, 90c and 75c; Staymen, \$1.10, 95c and 75c; Black Twigs, \$1.05, 90c, 75c; Wine-saps, \$1.45, \$1.20, 80c; Rome Beauty, 88 and larger, \$1.40, \$1.20, 90c; Rome Beauty, smaller, \$1.20, \$1, 75c; Yellow Newtowns, \$1.25, \$1.10, 75c; White Winter Pearmain, \$1.20, \$1 and 75c; Ben Davis, \$1.05, 90c and 75c.—“The Packer.”



RIGHT NOW

Begin to investigate NOW the sprayer you are going to use this next season. When you decide, be sure you are making an investment of permanent value—that you will get an outfit that will do what others cannot do, and will save time and trouble, and make money for you for years to come. That is just what you get in the

Bean POWER SPRAYER
The 10-point sprayer

You should know about Bean Porcelain Lined Cylinders, the Bean Pressure Regulator, the Pump without a stuffing box, Bean Underneath Suction, the Bean Refiller, Bean Eccentrics, the Bean Rocking Bolster, Bean interchangeable parts and Bean threadless ball valves.

You owe it to your orchard and to your pocket book to learn all about Bean Power Sprayers and the Bean complete line of hand and barrel pumps and accessories. You get Bean durability—reliability—efficiency—sturdiness in any Bean outfit you buy.

See your nearest Bean dealer at once or send coupon to us for the big Sprayer Catalog.

Bean Spray Pump Co.
213 West Julian St.
SAN JOSE, CALIFORNIA

Bean Spray Pump Co., San Jose, Cal.
Send me the Bean Sprayer Catalog.
I have acres of
I am interested in ☐ hand pumps, ☐ power
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Address

BETTER FRUIT

HOOD RIVER, OREGON

Official Organ of The Northwest Fruit Growers' Association
A Monthly Illustrated Magazine Published in the
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All Communications Should Be Addressed and Remittances
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ADVERTISING RATES ON APPLICATION

Entered as second-class matter December 27, 1906, at the
Postoffice at Hood River, Oregon, under Act
of Congress of March 3, 1879.

Fall Spraying.—A great many districts throughout the Northwest are troubled with anthracnose. The most effective time to spray for anthracnose is in the fall immediately after harvesting. The best remedy known is bordeaux treatment, which can be bought already prepared or made by the orchardist. Every grower as soon as he harvests his apple crop, if he has any anthracnose, or if there is anthracnose in his neighborhood, should immediately spray his orchard, not stopping until the job is completed. The sooner the orchard is sprayed after harvesting the better. It is equally important to spray orchards to the fullest extent possible before the fall rains commence; but even if a few showers occur do not stop spraying with bordeaux until the whole orchard has been sprayed.

Codling Moth.—A great many growers got the idea this season that worms were not going to be bad, others felt like economizing, omitting some of the sprays and failing to spray thoroughly in the balance. Whenever a grower omits any spray or fails to do his work thoroughly he can rest assured that, whether a good year or a bad year for worms, he will have a large percentage. There is no reason in the world why an apple crop should not be cleaner and more free from worm stings than it is, which is all due to a lack of spraying. It seems timely to call the attention of the fruit growers to this subject right now, when the loss is apparent and before they forget it, with the hope and belief that by so doing growers will do better work in 1918 and have a smaller percentage of wormy apples. There is nothing that hurts the apple grower or prevents consumption more than the marketing of wormy and badly-stung apples.

National Apple Day.—Thursday, November 1, was National Apple Day, which was pretty generally observed throughout the United States. All kinds of advertising publicity should be given the apple during the coming year for the purpose of increasing consumption and for the further purpose of having people eat apples instead of non-perishable foods. The dealers in the city can continue National Apple Day publicity in a great many ways, which will be big factors in increasing consumption. Apple shows can be held; occasionally special sales can be put on by the retailers; window decorations can be made by retail grocers; street-car advertising can be utilized to excellent advantage. Newspaper advertising is the best method in the world. The subject can be brought before the schools by the school teachers; electric signs can be displayed in the various prominent public places: "An Apple a Day Keeps the Doctor Away."

"Health's Best Way—Eat Apples Every Day."

"Eat Apples and Conserve the Non-Perishable Food."

From time to time special menus can be served in hotels, restaurants and clubs. The retail trade can hang out signs, banners and distribute dodgers, and in a thousand and one ways the wholesaler, the retailer and the public in general can help to increase the consumption of apples this year. Nothing contributes more to the health and the digestion than an apple a day. Nothing will contribute more to the prosperity of the apple growers—a big factor in the United States—than increased consumption of apples. Increased consumption of apples is highly desirable in the United States this year on account of the embargo on export trade, which means the United States will have to consume about 10 per cent more apples than in previous years—very easily accomplished if everyone would do his share.

Car Shortage.—Criticism is being made by the Northern Pacific Railroad about shippers along that line loading cars too light. There has already been a shortage of cars in the Northwest this season. If all shippers would load their cars to the maximum in accordance with uniform conditions, instead of loading to the minimum, it would require 10 per cent less cars, and probably 10 per cent would cover the shortage that exists this season.

Distribution.—The Northwestern Fruit Exchange, one of the large shipping associations of the Northwest, has announced they are selling apples to an increased number of cities and towns this year, stating in connection with the announcement that advertising has been a big factor in enabling them to open up new territory. A number of district associations have also announced they are selling to towns which they have not sold before. This is very gratifying. There is no question if the Northwestern apple crop is

properly distributed, and it can be done, there will be no further talk about overproduction. BETTER FRUIT has repeatedly claimed that the years of low prices have been more a factor of lack of distribution than overproduction.

Wormy Apples.—The same old complaints are bobbing up this year about growers shipping wormy apples. However, BETTER FRUIT is glad to say the complaints have not been very extensive and the number of offenses comparatively few. The growers are not always to blame, particularly this year when they have had to put up with a great deal of inexperienced help, and help is inclined to be more or less careless and extremely indifferent. There is only one way in which a grower can prevent this—that is by always being on the alert and continually watching the packers, and if not always present in the packing house instructions should be issued to the foreman of the packing house to guard against wormy apples going into any of the boxes.

Good Prices.—It usually follows when the movement of apples is active in the early part of the season and prices reasonable that consumption is greatly increased, and a good fair average price obtained for the grower throughout the season. On the other hand, when the opening prices are unnecessarily high consumption and activity in the trade is prevented in the first half of the season,—the result being that too many apples are held for the last half of the season and a slump occurs. The average price is always bad under such conditions. If the grower will accept and the dealer will pay a reasonable price at the opening and continue on this basis throughout the season, then there will be no more complaint of the growers getting low prices for their apples.

Movement of the Northwestern Apple Crop.—The movement of the Northwestern apple crop to date amounts to a little more than half of the quantity shipped up to date last year, largely due to the fact that the Northwestern apple crop is about two weeks late. Selling has been comparatively active, although it is claimed by some that speculators who bought at reasonable prices are prohibiting apples going into consumption at figures higher than the trade will justify at the present time. Growers have been disposed and ready to accept a reasonably good price for their apples. Large quantities have been disposed of at satisfactory figures by the growers and at a figure which would afford the dealer a fair profit at the same time.

Small Apples.—The sizes of the apples in the Northwest are smaller than usual this year, due to several causes, mainly the continued long dry spell throughout the entire summer, and also due to the lack of pruning. It is generally more or less true throughout

the United States that too little pruning has been done, consequently the tree has too much top and sets too many fruits for the root system, consequently apples are small. The great trouble seems to be the average fruit grower puts off pruning until spring instead of beginning early enough in the winter to prune the whole orchard thoroughly. I think there are very few of us, if we are frank, who will decline to admit this is the case.

San Jose Scale continues to be more or less prevalent all over the Northwest. Growers who are seriously affected should use sulphur sprays this fall, particularly if the pest is serious, and again next spring.

Fungus.—The Northwestern apple crop is comparatively free from fungus this year for the first time in many years. Never before in the past history of the business have growers sprayed so thoroughly or so effectively for fungus as in the year 1917. Their excellent success in not only controlling but practically eradicating this pest this year ought to be sufficient evidence, consequently it is hoped that every fruit grower will begin spraying for fungus in the semi-dormant and omit none of the applications of the sulphur sprays in the spring of 1918.

Storage-in-Transit

The following special announcement in reference to storage-in-transit speaks for itself, and is certainly appreciated by the fruit growers of the Northwest, as well as the dealers in Central Freight Association territory. This announcement is very significant inasmuch as it affords the Northwest an opportunity to store apples close to the large consuming centers in the large manufacturing districts, where there is an immense trade for Northwestern apples. By storing Northwestern apples close to consuming centers in readiness for supply as consumption requires, the trade can be increased and greater consumption created. Equally if not more important is the fact that this additional storage-in-transit territory opens up a new field for storage, enabling the Northwest to store large quantities early in the season, thus avoiding the dangerous cold weather that occurs later in the year:

SPECIAL ANNOUNCEMENT Storage-in-Transit.

Rochester, N. Y., October 20, 1917.

We take pleasure in announcing that the Storage-in-Transit Tariffs on Box Apples will become effective in Central Freight Association territory (Illinois, Indiana, Michigan and Ohio) on and after October 27th on shipments from Montana, Idaho, Oregon and Washington. The tariffs will go into effect on the transcontinental basis of five (5) cents per hundred over the through rate.

We hope to be able to make a definite announcement the first of the week with reference to the effective date of tariffs in Trunk Line territory.

Very truly yours,

R. G. Phillips, Secretary,
International Apple Shippers' Association, 522
Mercantile Building, Rochester, New York.

R. S. French, General Manager,
National League of Commission Merchants, 90
West Broadway, New York.

W. D. Tidwell, Secretary,
Western Fruit Jobbers' Association, P. O. Box
1349, Denver, Colorado.

**25¢
A
MONTH**

RUNNING WATER IN THE COUNTRY HOME For Less Than City Rates

A man told us at the State Fair that his cost of operating his MITCHELL PNEUMATIC WATER SYSTEM was about \$2.00 per year. We were surprised, but upon further inquiry among owners found that the operating cost of the average Mitchell System, using the Stover Engine for power, is 25¢ per month. Can YOU afford to let this small sum stand between you and the comfort and convenience of water under pressure in your home and about the place?

**Mitchell Water Systems
are Successful**
because simple, dependable, easy to operate.
There is nothing about the
Mitchell System that is complicated, delicate,
or that will cause trouble and expense.

NOW is the time to install

your system. Drop us a line for our free book
"THROUGH THE EYE OF THE CAMERA"

Ask for Book No. 22

MITCHELL, LEWIS & STAYER CO.
PORTLAND, OR. SPOKANE, WN.



Keep your harness oiled. Leather is so porous that unless you protect it, sweat, moisture and dust attack the fibre and your harness gives out years before its time. The preservative oils in Eureka protect your harness. Keeps it jet black.

Eureka Harness Oil

Standard Oil Company
(California)

Further recognition for motor oil made from California asphalt-base petroleum was brought to light recently when a prominent Peerless dealer showed a group of newspaper men a letter from the Peerless factory. This letter stated that after testing sev-

eral kinds of oil, the technical department was able to secure uniformly better results with a certain widely-known advertised motor oil made here on the Pacific Coast from California asphalt-base petroleum, than from any of the oils which they tested.

Professional Knowledge

By Professional Knowledge we mean exact information, the kind that is gained by scientific research, by laboratory experiments, by proving theories in practice.

Success in fruit raising demands professional knowledge. So much depends upon exact and positive information. Guess-work is expensive anywhere. It is particularly so for the fruit raiser.

We maintain a department for the dispensing of professional knowledge, of scientific information. It is in charge of Mr. S. W. Foster, an entomologist of eleven years' practical experience, six of them in the United States Bureau of Entomology, stationed on the Pacific Coast.

We know of no man better equipped by thorough college training, and wide experience, to counsel the fruit grower. He is at your service. He travels extensively in orchard sections to keep informed, and to ascertain the best methods of insect and fungus control.

Definite and reliable directions for treatment of your trees no doubt will be of great value to you. The results obtained by the use of different spray materials, and under varying conditions, are yours for the asking. The time and method of applying spray materials are all-important. If you are uncertain what to do, or when to do it, write to us and Mr. Foster will reply.

We publish from time to time bulletins giving the best available information concerning insects and diseases. Write for the one in which you are interested.



ORCHARD BRAND SPRAY MATERIALS are scientifically prepared. There is one for each purpose required on the Pacific Coast. Write for bulletin:

(1) How to control the principal insect enemies and fungus troubles on deciduous fruit trees during the growing period;

(2) The dormant spraying of deciduous fruit trees west of the Rocky Mountains;

(3) Orchard Brand spraying materials.

ORCHARD BRAND SPRAYING MATERIALS are warehoused by the following distributors, who can supply dealers and fruit growers:

GILBERT & DEWITT,
Hood River, Oregon.

C. J. SINSEL,
Boise, Idaho

ROGUE RIVER CO-OPERATIVE
FRUIT GROWERS' ASSOCIATION,
Medford, Oregon.

MORGON, McKAIG & CO.,
North Yakima, Washington.

WELLS & WADE,
Wenatchee, Washington.

SAMUEL LONEY & CO.,
Walla Walla, Washington.

McGOWAN BROTHERS
HARDWARE COMPANY,
Spokane, Washington.

Insecticide Department,
General Chemical Company,
Dept. G-1, San Francisco, Cal.

Please send me free bulletins regarding the control of orchard pests and diseases. I have

.....acres applesacres peaches
.....acres pearsacres apricots
.....acres prunesacres cherries
.....acres grapesacres almonds

Name

Address

Mail this Coupon to Dept. G1

General Chemical Company
San Francisco, California

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

Tenth National Apple Show

War posters and relics will be shown in great numbers on "Liberty Street" at the coming National Apple Show in Spokane, November 19 to 24. Through the assistance of the War and Navy Departments and by appeal to United States consuls in foreign ports, the management has received the biggest collection of war posters ever gathered. Every week new consignments arrive, and what was originally intended to occupy a small corner of the buildings has now been changed, and a large department to be known as "Liberty Street" will be used to show these posters and relics. Every feature of war service is depicted in brilliant pictorial issues.

★ ★ ★

The woman who can prepare the best, well-balanced meal composed of from five to ten dishes, for one person, all made wholly or in part from apples and carrying out the Hoover idea of food conservation as far as possible, will be awarded \$50 in gold at the National Apple Show in Spokane, November 19 to 24. This prize is the big feature of the women's department this year. It is open to any woman and no entrance fee is required. Each meal must be complete. Judging will be on food value, palatability, attractiveness and economy. The four women whose meals are rated second in value will each be given a \$10 prize.

★ ★ ★

"Maiden Blush" and "Col. Newtown Pippin" will be joined in wedlock on the opening night of the Tenth National Apple Show in Spokane, November 19. The ceremony will be performed by the "Rev. Ben Davis." The bride will be given away by her father, the "Senator," while her mother, the "Duchess," is expected to mourn. The bride will be attended by "Miss Delicious" and "Miss Rome Beauty." "Col. Newtown's" best man will be "Mr. Wagener." The groom's only relative, "Brother Jonathan," may be late in arriving, but his lifelong friend, "Mr. Winesap," is expected in plenty of time and in his customary inebriated condition. The wedding spectacle is a pantomime, planned on an elaborate scale. It will be staged by Miss Marguerite Motie, director of elocution and expression. Miss Motie is more generally known as "Miss Spokane," a title bestowed by civic bodies in recognition of her as the city's formal representative on many occasions. The many apple characters made famous by Morris' cartoons will be faithfully reproduced.

★ ★ ★

Four big feature parades, each distinctly different from the others, will be the principal street attractions during the National Apple Show in Spokane November 19 to 24. A dominant note of patriotism, appropriate to the war-time spirit of the hour, will be emphasized in all of the street demonstrations. The biggest parade of the week will be Thursday night. It will be historic and patriotic, illustrating scenes from American history, beginning with the land-

ing of Columbus and extending through to the present day. Instead of soliciting floats to be prepared by the several stores and societies, the committee in charge has arranged that each line of business shall have a representative float, the various merchants pooling their funds for this purpose. All of the floats are being built under the direction of the parade committee, which assigns the subjects to be represented and takes full responsibility for construction. The result expected is a beautifully harmonious spectacle. Only organizations in complete costumes or uniforms will be permitted in this procession.

What Your Are Asked to Do for Your Country

THE men of the Allied Nations are fighting; they are not on the farms. The production of food by these countries has therefore been greatly reduced. Even before the war it was much less than the amount consumed. The difference came from America and a few other countries. Now this difference is greater than ever, and, at the same time, but little food can be brought in from the outside except from America.

Therefore, our Allies depend on America for food as they have never depended before, and they ask us for it with a right which they have never had before. For today they are our companions in the great war for democracy and liberty. They are doing the fighting, the suffering, and dying—in our war.

Why we must send more wheat.—England, France, Italy and Belgium, taken together, import in peace time 40 per cent of their breadstuffs. But now, with their reduction in harvest, they must import 60 per cent. We must increase our normal export surplus of 88,000,000 bushels to 220,000,000 bushels. It can be done but in one way: by economizing and substituting. The people of the Allies cannot substitute corn alone for bread, as we can. They are using other cereals added to wheat flour to make war bread, and can thus use up to 25 per cent of corn for wheat. We have plenty of corn to send them, but, except in Italy, whose people normally use it, our Allies have few corn mills, and corn meal is not durable enough to be shipped by us in large quantities. Moreover, the Allied peoples do not make their bread at home; it is all made in bakeries, and corn bread cannot be distributed from bakeries. There is but one way: we must reduce our use of wheat. We use now an average of five pounds of wheat flour per person per week. The whole problem can be met if we will substitute one pound of corn or other cereal flour for one pound of wheat flour weekly per person; that is, if we reduce our consumption of wheat flour from five pounds a week to four pounds a week.

Why we must send more meat.—The food animals of the Allies have decreased by 33,000,000 head since the war began; thus the source of their meat production is decreasing. At the same time, the needs of their soldiers

SAVE TIME, LABOR, MONEY

Makes the Biggest Power Sprayer a One-Man Outfit

Simple, Efficient, Dependable

Takes entire capacity of the largest sprayer through one line of hose. One man with this Spray Gun does the work of two or three men with ordinary nozzles.

Full Solid
Fog to
Long Distance

SPRAY

Tops same trees as 10 or 12 foot bamboo extension or sprays full solid fog by half turn of handle.

Bean Spray Pump Co.

213 W. Julian Street

SAN JOSE, CALIFORNIA

Made in Two Sizes

Bean Giant Gun

Capacity 8 gals. per minute

Bean Pony Gun

Cap. 4 gals. per minute

BEAN
SPRAY
PUMP CO.,
213 W. Julian
St., San Jose.

Please send me literature describing the Bean Giant Gun and other spray accessories.

Name.....

Town.....

State.....



Your horses are glad when you use Mica Axle Grease. The powdered mica makes a smoother spindle. The wagon pulls twice as easy, and the grease lasts twice as long.

STANDARD OIL COMPANY
(California)

MICA AXLE GREASE

APPLES

PEARS

ORANGES

For European Distribution.
Boxed Apples and Pears a Specialty.

GERALD DA COSTA

100 & 101, Long Acre, Covent Garden, London, W. C. 2, England

Cables: "Geracost, London."

Codes: A. B. C. 5th Edition and Private.

Shipping Agents: LUNHAM & MOORE, Produce Exchange, New York.

MYERS SPRAY PUMPS



ARE THE SEED FOR BETTER PROFITS

Profits, Profits, Profits.
It's profitable to do things well, and especially your spraying, for who sprays unless there is to be ample returns.

Where spraying is done with a **MYERS BUCKET, BARREL or POWER SPRAY PUMP** there are always profits sooner or later. Big fruit growers tell you this as will gardeners and others who use them. They are "The Seed for Better Profits" from spraying because they are designed, built and equipped for efficient spraying work.

Many spray in November. The bright, crisp fall days are ideal for spraying. If you spray during this period, or next Spring, write us about **MYERS SPRAY PUMPS**, and make them your "Seed for Better Profits" through larger and better crops.

Catalog mailed free to anyone.

F.E. MYERS & BRO.
120 ORANGEST. ASHLAND, OHIO.

Attention, Fruit and Vegetable Growers

CAN your Fruits, Vegetables, Meats and Fish in Sanitary Cans, with the H. & A. Steam Pressure Canning Outfits, built in Family, Orchard and Commercial size; seal the cans with the H. & A. Hand or Belt Power Double Seamer; they will save your perishable fruits and vegetables at ripening time when nothing else will. Write for descriptive matter.

Henninger & Ayes Mfg. Co.
47 S. First St., Portland, Ore.

THE BEST Walnut Trees

Pay Best in the Long Run.

Don't plant low grade trees when good ones are available. Our trees often make as much growth in one year as others do in two. This is due to our superior root system. Write for prices.

GRONER & McCLURE
HILLSBORO, OREGON

and war workers have increased the necessary meat consumption. Our meat exports to our Allies are now already almost three times what they were before the war. The needs of the Allies will steadily increase, because their own production of food animals will steadily decrease because of lack of feed for them. If we will save one ounce of meat per person per day we can send our Allies what they need.

Why we must send butter and milk.—The decreasing herds and the lack of fodder mean a steady falling off in the

dairy products of our Allies. They have been asking for larger and larger exports from us. Last year we sent them three times as much butter and almost ten times as much condensed milk as we used to send them before the war. Yet we must not only keep up to this level, but do still better.

Why we must send sugar.—Before the war France, Italy and Belgium produced as much sugar as they used, while England drew most of its supply from what are now enemy countries. France and Italy are producing less than they need, while England is cut off from the source of 70 per cent of her usual imports. These three Allied countries must now draw 2,000,000 pounds more of sugar than they did before the war from the same sources from which we draw our supplies. We must divide with them. We can do it by economizing. The usual American consumption per person is just double that of France.

Let us remember.—Let us remember that every flag that flies opposite the German one is by proxy the American flag, and that the armies fighting in our defense under these flags cannot be maintained through this winter unless there is food enough for them and for their women and children at home. There can only be food enough if America provides it. And America can only provide it by the personal service and patriotic co-operation of all of us.

The small daily service in substitution can be done by all; the saving in waste by the majority, and the lessening of food consumed by many. This individual daily service in 20,000,000 kitchens and on 20,000,000 tables multiplied by 100,000,000, which is the sum of all of us, will make that total quantity which is the solution of the problem.

Storage-in-Transit Privilege

Mr. J. Curtis Robinson, chairman of the Transportation and Storage Committee of the Fruit Growers' Agency, was this morning in receipt of a telegram from R. G. Phillips, secretary The International Apple Shippers Association, with headquarters at Rochester, New York, reading as follows: "Storage transit box apples from Northwestern States just granted official classification territory which includes central freight association trunk line and New England territories, effective soon as tariffs can be published. Privilege granted on transcontinental basis five cents per hundred advance over through rate. Advise all parties possible your territory."

"While this new privilege will undoubtedly accord to fruit shippers in New York and Michigan," states Mr. Robinson, commenting on this wire, "it will be of inestimable value to a great many fruit shippers in the Northwest. Many shippers have heretofore engaged storage facilities at Niagara frontier and paid a proportional rate of ten cents per hundred pounds from there to New York City. This new privilege will mean that shippers in the Northwest who desire to store in transit at Buffalo, New York; Indianapolis, In-

Let'er Rain



FISH BRAND SLICKERS
will keep you dry as nothing else will

FISH BRAND POMMEL, the best Saddle Coat in the world.

DEALERS EVERYWHERE
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diana; Pittsburg, Pennsylvania, or points in New England territory, or even New York itself, may hereafter divert the shipments on the through rate to ultimate destination beyond the point of storage by paying a penalty of five cents per hundredweight additional to the present through rate. This should mean a saving of many hundreds and perhaps thousands of dollars to some of the shippers in the Northwest and afford them a much wider privilege of distribution for their apples. The Northwest is to be congratulated in having such men as Mr. Phillips, who has spent so much time and taken so much pains in pointing out to the carriers the need for this storage-in-transit privilege."

The Walnut—Cultural Methods

Continued from page 7.

Grafting old walnut trees in order to form a top of some more desirable variety than the original has long been practiced in a small way in California, but has been confined mostly to black-walnut stocks. Roadside trees and small orchards have been worked over at various times, running back as far as 1893 at Vacaville and 1891 at San Jose. Some of these trees now have a spread of branches of 60 to 80 feet.

The average seedling walnut orchard is not satisfactory for several reasons; the nuts are uneven in size and form and the trees are neither even in size nor equal in production. It may be said that about one-fourth the trees produce but few walnuts, another one-fourth produce about enough to pay their own expenses, leaving the other half to make whatever profit is obtained. When the orchard is of grafted trees, grown from scions which came from trees that produce large crops, each tree will produce nuts like every other tree, and if the selection of nursery stock has been properly done the trees will be very uniform in all respects. Several styles of grafting have been practiced and all have had a fair degree of success, but modifications of the cleft graft have been most generally used, each operator making changes as he thought best. If the trees are from two to three inches in diameter they may be cut off at about four feet above the ground, and below the branches, then three or four scions may be placed in one stock, or three or four of the branches may be cut off at ten to twenty inches from the body and the scions inserted.

It is seldom profitable to top graft very old trees because of the amount of work, and the care which is neces-



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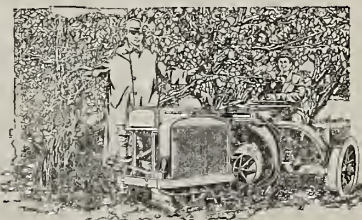
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It is the lowest-priced track-laying tractor manufactured. It weighs but 3100 lbs. and costs less to operate than wheel-type tractors of equal power. Note how the track grips the ground, and compare that contact with the wheel-types. No other tractor can work so well in light sail.

This Tractor will pass under tree branches only 4 feet off the ground, plowing close up to the trunks. It works between 7-foot rows in vineyards, and cultivates right up to the vines without breaking off young shoots.

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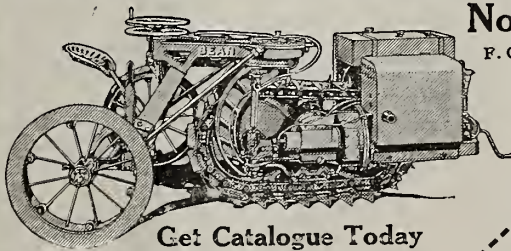
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sary to prevent decay in the trunk where large branches have been taken off. Trees of ten to fifteen years' growth should have the branches cut at places where they are not more than three inches in diameter, taking out all the branches which are not necessary for the top. This necessitates going well out on the branches and a large number of scions. Having determined the trees which are to be top grafted by the records of previous years, the operator marks the stubs that are to be left by a small notch out of the bark at the place where the cut is to be made. All other branches are cut close to the body of the tree. The operator places the scions and an assistant follows with hot wax covering all cuts on both scions and stock. In cutting large branches it is necessary to make two cuts, the first being some distance outside the final cut to prevent splitting the stub or the trunk. Scions should always be of mature wood, with as small pith as can be had readily, and must have good living buds, though not necessarily those of the last year nor from any particular part of the growth. They may be from one-fourth to one-half inch in diameter but should have at least two buds. The growth having buds close together is best as shorter scions can be used, and as these are not so much exposed to evaporation are more sure to grow. When the tree is prepared use a heavy butcher's knife and mallet to split the stubs, placing the knife across the stub as if a chip one-half to five-eighths inch thick was to be split off. Then depress the handle of the knife to an angle of 30 to 45 degrees and split the edge down to two and one-half to three inches, allowing the knife to reach the farther side of the stub but not making the split entirely across the stub. Open the cleft with a steel wedge one-half to five-eighths inch wide and thickest on one edge, placing the thickest edge toward the outside. Trim the cleft smooth with a sharp knife. Then cut the scion so as to have perfect joints inside as well as along the inner bark and place it so the inner bark (the cambium layer) of both will be on the same line, or at least will cross twice, then remove the wedge and put hot wax over all the cuts on both scion and stock at once, being careful to pour hot wax in the cleft until full.

The work should be examined every three or four days until an inch or more growth has been made on the scions, and if thread-like cracks are found they should be closed with hot wax so the scion will not be exposed to the air until a callous has formed. Any cuts on the tree not covered by wax should have a coat of heavy mineral paint and the body and stubs a coat of whitewash. The wax is made of one pound beeswax, five pounds resin, one pint flaxseed oil and one ounce lamp-black, melted together. The object is to get a wax that will not run in the heat nor crack in the cold, and a little practice will soon show whether the wax needs more or less oil. A convenient furnace can be made for heating the wax in the orchard by taking a coal-

oil can, cutting out the top, placing four wires across, two each way, four inches from the top, and cutting an opening to use in placing fuel in the lower part of the can. A wire bail completes the furnace. A three-quart saucepan is large enough to hold the wax which may be made as needed.

If there is an excessive flow of sap which loosens the wax on the ends of the stubs it should be controlled by boring some one-fourth inch holes in the body of the tree near the ground. Do not bore more holes than are needed, as three or four holes four inches deep will control the sap flow of the largest tree. When the flow has been controlled wipe the stub dry and wax again. After the scions have made one foot growth it will be necessary to nail laths, one inch by two inches by eight long, Oregon pine, on the tree in such a manner that the shoots can be tied to them and the new tree formed as desired. Leave the laths on two years.

Do not take off any of the sprouts at first, except such as may be near the scions, until the scions have started, then take off those within six to twelve inches of the scions. When the sprouts reach a length of two feet they should be headed back but not removed, as they are needed to keep the roots in good condition and to protect the body from sunburn. After the scions are firmly established the sprouts can be thinned to advantage, but it is best to leave some on the south and west sides to protect the body from sunburn until the following winter. Keep all the scions that will grow the first year and do not head back a scion while it is growing. If more scions have grown than is needed they can be thinned the next winter, and if some scions should fail so as to leave a stub without growing scions a sprout may be trained and budded the following August or September, or may be grafted the following spring.

The principles of nursery grafting are the same as in top grafting, though tongue grafts are commonly used and the scions strongly tied in place. The soil is removed from the stocks to a depth of several inches and the cut made just under the soil line but not low enough to be in the soft or root part of the stock. After the scions are in place, tied and waxed, the soil is carefully heaped over them to a depth of several inches. Strong laths are used as stakes, to which the young growth is tied to keep it erect and straight.

Modern warfare consists of united, co-ordinated effort on the part of entire nations. If the present war teaches Americans to co-operate it will not have been entirely wasteful.

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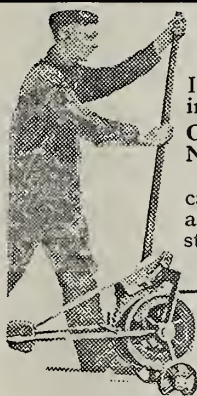
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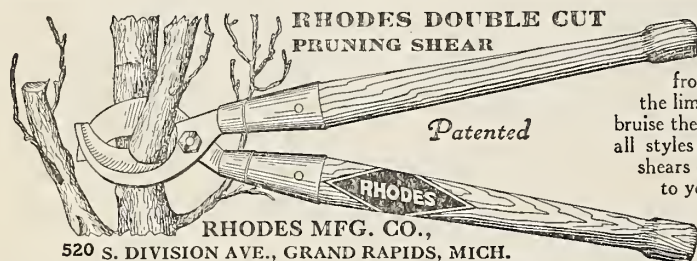
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BETTER FRUIT	1.00
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All for	1.25

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McCall's Magazine75
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Apples vs. Potatoes

THE Federal Food Administration is laying great emphasis on the importance of the American public consuming greatly increased quantities of fruits and vegetables, and decreased quantities of wheat, meat and other exportable articles. The press has been doing a valuable national service in disseminating this propaganda. A very intelligent educational article appears hereunder, which you are urged to read because it is of national interest.

An excellent paper was read before the National Apple Growers' Association Convention held at Niagara Falls by Mrs. H. M. Dunlap, wife of the president of the association. It was entitled "Apples as a Food and Its Dietetic Value." We quote the following interesting portion of the address which ought to be circulated in every home where apples are not a regular part of the diet. There is a movement on foot to induce the people of this country to eat more apples and save the nonperishable foods for the armies at the war front. The lady said:

"In the apple grower's profession I see great opportunities for good, because I know of no one food that can do so much towards helping to produce and maintain health as the apple. It is called 'The King of Fruit,' and the little book that has been edited under that title giving 209 ways of preparing it has the effect of making one realize how valuable it is as a food for man.

"With cold storage facilities, it becomes possible to have an apple every day in the year, which I think is equally, if not more important from a health standpoint for the individual, than a potato a day. Great sympathy and solicitation has been manifested the past year because the price of potatoes were beyond the economic possibilities of some of our people, but a scarcity of apples is never considered as a dietetic calamity. Why? Because an apple for to these many years has been considered a luxury and never a necessity, like the potato. An apple is said to contain only about one-fourth less solid matter than a potato; it contains elements of equal or more value, in maintaining a balanced ration for man than the potato.

"I am sure for the improved health of mankind it might be well to every

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day substitute at one meal at least an apple for a potato. As often as possible have the raw apple served. I know a family where the year around raw apples together with some form of dairy products are the principal articles of their evening meal. They are positive that it has added, in a large measure to their good health and therefore enjoyment of life.

"The chemical constituents of the two foods are something like this: Potato, water 62.2, protein, 1.8, fat 0.1, carbohydrates 14.7, ash 0.8, fuel value per pound 295; apple, water 84.6, protein 0.4, fat 0.5, carbohydrates 14.2, ash 0.3, fuel value per pound 285. As you see, a large per cent of the bulk of both is water. The apple lacks only five-tenths of 1 per cent as much carbohydrates as the potato and only ten less in fuel value than the potato.

"Now let us see what these elements do for us. I can not give it to you in any better way than by reading an article written by Dr. Benjafield, Hobart, Tasmania, which clearly shows its dietetic importance to man.

"As a food and medicine an apple is a wonderful example. Suppose an apple to be the size of a large breakfast cup and into this cup you put nearly half a pint of water and stir into it of concentrated food like that contained in an egg, half a teaspoonful; of fatty stuff like butter, a little less than half a teaspoonful; of sugar, both cane and grape sugar, two tablespoonfuls; of mineral matter as much as will lie on a sixpence of acids, a little more than a teaspoonful; of skin and core, a little more than two-thirds of a teaspoonful."

"From a medical point of view we look upon each of these elements as follows: The food of protein is pure and strengthening and exists in the apple, combined with sugars and acids, and when taken enters rapidly into the muscles, where it is readily broken up, impairing heat and strength, so that the athlete under great exertion soon gets the stimulus.

"The fatty matters are so beautifully combined with acids that even the most delicate child does not recognize that he is taking fat when he is eating an apple.

"The sugars of carbohydrates form the most attractive element as they are the most nourishing part of the fruit. And these sugars are just crystalized sunshine and are far more digestible than any ordinary sugar. The child, from babyhood just loves it and it is excellent food for him. In the adult, especially in advanced age, ordinary chemically prepared sugar when taken freely produces rheumatism, gout and such like diseases, but these sugars never set up any of these troubles; indeed gouty people get relief from eating fruit.

"The mineral matter in the apple is one of nature's wonders. The blood must keep its red color or it cannot do its work in the body and we die and this red color depends on the presence of iron. When we eat an apple we eat just the right dose of iron,

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10 cents more per box on a minimum car of 630 boxes would give you \$63.00 more per car profit—on 10 cars \$630.00—on 20 cars \$1,260.00, and so on.

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Expert knowledge and choice of materials and solid construction insure lasting service—a feature of this tractor that puts bigger profits into the hands of "Caterpillar" Tractor owners. The experience of the thousands of satisfied "Caterpillar" Tractor owners is a safe guide for you to follow.

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which the blood needs, and the invalid with poor blood will get iron in the apple which is far more easily absorbed by the blood than in any preparation of iron compounded by the chemist.

"Lime is found in the apple in the same form as found in our bones, and in the apple the lime is so beautifully combined with phosphoric acid, that when an apple is eaten the bones of the body are nourished by these lime salts, and by these additions of lime the child is able to build up the young growing bone. Ricketty children have bones deficient in lime. I have never seen Ricketts or soft bones in a Tasmanian orchard.

"Magnesia—yes, nature has placed in the apple quite a nice little dose of magnesia and it helps to keep off rheumatism by purifying the blood and assisting the bowels.

"Phosphorus—Professor Schaffer told us recently, in the great scientific lecture of the year, that life could not exist without phosphorus, and in the apple this great nerve tonic exists in most soluble form as phosphoric acid. Sulphur as sulphur acid also is a great blood purifier and has an especial effect on the skin and skin diseases.

"There is just one more thing which science has not explained and that is the wonderful life process by which all these tasteless (some even nasty) elements were blended together into a beautiful fruit and a perfect food.

"The sailor who lives a long time on salt meat and biscuit alone will rot with scurvy, and if he takes the sugars, acids, etc., contained in an apple every day separately he will still die, but if he takes an apple a day his blood will keep perfectly right."

The editor of BETTER FRUIT takes some satisfaction in calling attention to the fact that one of the main references in Mrs. Dunlap's most excellent address was to the "209 Ways of Preparing the Apple," which was first published in BETTER FRUIT in October, 1912, five years ago, and was the first move made for increasing consumption of apples by using them for cooking and for dessert. This book of receipts, "209 Ways of Serving Apples as Dessert," has been re-published in different forms—by the International Apple Shippers' Association, which is-

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sued 500,000 copies: by many of the railroads and many of the fruit concerns in United States. It is also interesting to note that the other principal reference to the dietetic value of apples, refers to an article by the late Dr. Benjafield, Hobart, Tasmania, which was first published in BETTER FRUIT August, 1916, the original article being sent by Dr. Benjafield to BETTER FRUIT. And, by the way, the editor of BETTER FRUIT had many exceedingly pleasant and instructive letters from the late Dr. Benjafield. The editor also desires to say it was with much sorrow he received a letter from Dr. Benjafield's son advising him of the death of his father, and enclosing a partially written letter from the Doctor to the editor.

Food Value of Apples

IN the early weeks of the war I gave an interview to one of the London dailies and ventured to prophecy that the end of the contest would be influenced largely by dietary problems, and in these problems I did not consider that the question of protein and scale calorific values for muscular substance would be of so much importance as those of foods which supply nerve nutrition; i. e., fats and salines. It is very difficult to deprive any besieged country—or even besieged city—of all sources of muscular nourishment so long as any other cellulose remains to be transformed by chemical agencies into a more digestible form of carbo-hydrate. The difficulty for Germany as a beleaguered country was therefore not really meat, or cereals, or potatoes, but fats and fruits and salads.

The joining up of Turkey threw my prophecy out of gear as to time, because it opened up the great stores of oil and figs and other fruits of Asia Minor. This source is slowly failing, and today, in spite of a complete calorific dietary the people of Germany are beginning to develop the disease of mal nerve nutrition. There are beginning in Germany already grave manifestations of the basic origin of many diseases. The latest is a wide spread of oedema in the legs and feet and face, of which particulars are given in a late issue of "The Lancet." This will steadily get worse and worse

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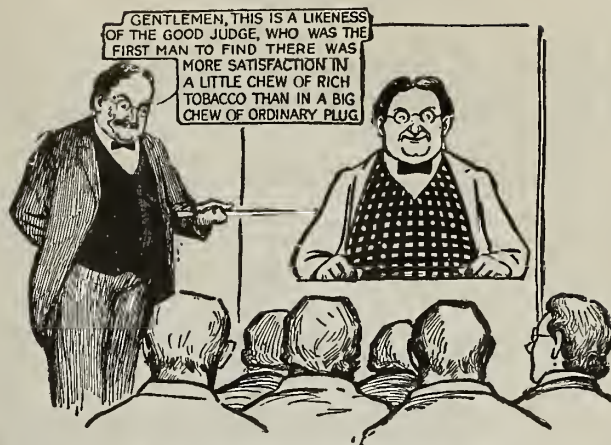
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Carloads or less. Get our prices.

Western Pine Box Sales Co.
SPOKANE, WASH.

PREPAREDNESS LECTURE.



THIS war is awakening men to the truth about a lot of things besides Preparedness—and chewing tobacco is one of them. Soldiers are strong for W-B Cut and the facts are right before you. These shreds are *all* tobacco, no gummy sweetening—*rich* tobacco—more sap in the leaf than in ordinary tobacco by a long shot. That's why it's so satisfying and so economical—a little bit goes a long way.

Made by WEYMAN-BRUTON COMPANY, 1107 Broadway, New York City

"Splendid Lubricating Qualities"

PAIGE

McKinney-Cord Motor Co., Phoenix
"we cannot speak too highly of the splendid lubricating qualities of Zerolene."

WINTON

The Winton Co., San Francisco
"We use Zerolene extensively. It is giving entire satisfaction."

CHEVROLET

J. W. Leavitt & Co., Los Angeles
"Zerolene is our choice for Chevrolet cars."

FORD

Fahy-Atterbury Sales Co., Los Angeles—"settled on Zerolene after extensive tests."

ZEROLENE

The Standard Oil for Motor Cars

Endorsed by Leading Car Distributors

—because the records of their service departments show that Zerolene, correctly refined from California asphalt-base crude, gives perfect lubrication—less wear, more power, least carbon deposit."

Dealers everywhere and at our service stations.

STANDARD
OIL COMPANY
(California)



For tractors, Zerolene Heavy-Duty is especially recommended.

Ridley, Houlding & Co.

COVENT GARDEN, LONDON

Points to remember when consigning
apples to the London Market

1.—We Specialize in Apples

2.—All Consignments Receive our
Personal Attention

3.—The Fruit is Sold by
Private Treaty

CABLE ADDRESS: BOTANIZING, LONDON

LESLIE BUTLER, President
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Established 1900

Butler Banking Company

HOOD RIVER, OREGON

Capital . . . \$100,000.00

4% Interest Paid in our Savings Department

WE GIVE SPECIAL ATTENTION TO GOOD FARM LOANS

If you have money to loan we will find you good real estate security, or if you want to borrow we can place your application in good hands, and we make no charge for this service.

THE OLDEST BANK IN HOOD RIVER VALLEY

F. W. BALTES AND COMPANY

Printers · Binders



Unexcelled facilities for the production of Catalogues, Booklets, Stationery, Posters and Advertising Matter. Write us for prices and specifications. Out-of-town orders executed promptly and accurately. We print BETTER FRUIT.

CORNER FIRST AND OAK STREETS
PORTLAND, OREGON

as another winter comes on unless fresh fruit and salads and seed oils can be introduced largely into Germany.

I have dealt at length with Germany and her fate, to emphasize the great importance of avoiding a similar catastrophe for England. English stamina, courage, endurance and heart for the war, depend on complete nerve nutrition. Now for this the calorific values of wheat, or beans, or beef, affords no criterion. The danger is that laboratory scientists will measure the comparative importance of cargoes by calorific values, and will on this ground tend to debar juicy fruits as being very light cargo compared with legumes or cereals.

Every effort should be exercised to prevent this, or else, when the mischief is done, there will be a panic importation of anti-scorbutic fruits. I note that a small number of ships are still allowed to run to the West Indies for bananas, and this is excellent, but weight for weight and bulk for bulk, the most important fruit to be imported during the winter and early spring of 1918, is apples. Were I Food Controller of Germany and allowed the choice of free import of one article of food from November to April, I should select the apple. So, in England, while for importation purposes legumes and peanuts are the most concentrated form of protoid; rice, and wheat, and maize, the most important of the cereals; olive oil, sesame oil, peanut oil, and almond oil, the finest forms of fat; apples, lemons, oranges (and onions) are immeasurably the most important of fruits, which are nerve foods, and without the presence of whose salts, physiological functions fail. It will be a grave risk to England's home stamina if her supply of apples is cut off, because during the winter conditions in this climate they are superior to either lemons, or oranges, and cannot be replaced by any other fruit.

\$100,000 Apple Sale Closed.

One of the largest apple deals of the season was closed in Lewiston on Monday, when the entire output of the orchards of the Lewiston Land & Water Company was sold to Haley-Neeley Company of Sioux City, Iowa. The sale was negotiated by the Northwestern Fruit Exchange. Frank Robertson, of Portland, one of the receivers of the Lewiston Land & Water Company, and H. L. Powers, manager of the Lewiston Land & Water Company, represented the sellers; W. G. Haley and Roy Matthews represented the buyers, while the Northwestern Fruit Exchange was represented by its field manager, J. B. Adams. The terms of sale are cash acceptance shipping point, and the price, while not disclosed, was said to be eminently satisfactory to the sellers.

Forward-looking farmers are making necessary repairs on their machinery before putting it away for the winter.

Be Loyal! Save Your Fruit!



- 1st. Prune your trees properly.
- 2d. Do your pruning with one-half the labor cost. There is just one Pruner which will do the work twice as fast and easy as any other make; *it's the*

Bastian!

If your dealer does not carry the Bastian Pruner, mail us your order direct.



N. W. Fence & Supply Co.
PORTLAND OREGON
 Sole manufacturers of Bastian Pruners, Barnett Fruit Picking Pails and Northwest Orchard Ladders



Pacific Coast Agents
United States Steel Products Co.

San Francisco
 Los Angeles
 Portland
 Seattle



J.C. Pearson Co., Inc.
 Sole Manufacturers

Old South Bldg.
 Boston, Mass.

PEARSON
ECONOMY in buying is getting the best value for the money, not always in getting the lowest prices. PEARSON prices are right.
ADHESIVENESS or holding power is the reason for PEARSON nails. For twenty years they have been making boxes strong. Now, more than ever.
RELIABILITY behind the goods is added value. You can rely on our record of fulfillment of every contract and fair adjustment of every claim.
SATISFACTION is assured by our long experience in making nails to suit our customers' needs. We know what you want; we guarantee satisfaction.
ORIGINALITY plus experience always excels imitation. Imitation's highest hope is, to sometime (not now) equal Pearson—meantime you play safe.
NAILS

Richey & Gilbert Co.

H. M. GILBERT, President and Manager

Growers and Shippers of

Yakima Valley Fruits and Produce

SPECIALTIES:

Apples, Peaches, Pears and Cantaloupes

TOPPENISH, WASHINGTON

The
First National Bank

HOOD RIVER, OREGON

A. D. MOE - President
 E. O. BLANCHARD - Cashier

Capital and Surplus \$125,000
 Assets Over \$500,000

Member Federal Reserve System

Western Cement Coated Nails for Western Growers

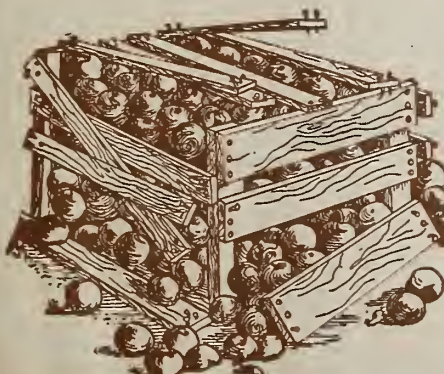
Our Cement Coated Nails are always of uniform length, gauge, head and count. Especially adapted to the manufacture of fruit boxes and crates. In brief, they are the Best on the Market.

Write for Growers' testimonials.

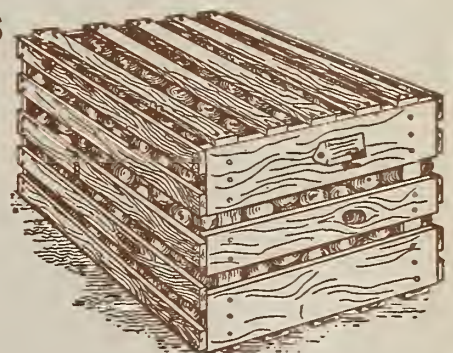
Colorado Fuel & Iron Co.

DENVER, COLORADO

Pacific Coast Sales Offices
 Portland, Spokane, San Francisco
 Los Angeles



Using Cement Coated Nails



AFTER use of C. F. & I. Co.'s Cement Coated Nails

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STEINHARDT & KELLY

NEW YORK

UNQUESTIONABLY THE
MOST IMPORTANT FACTOR
IN THE DISTRIBUTION OF
THE COUNTRY'S FANCY
APPLES
AND OTHER FRUITS

OUR MARKET-
THE WORLD